

FURTHER NOTES ON AUSTRALIAN COLEOPTERA,
WITH DESCRIPTIONS OF NEW GENERA AND
SPECIES.

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XXXIII.

CARABIDÆ.

PHORTICOSOMUS.

P. calcaratus, sp. nov. Piceo-brunneus, elytris postice et pronoto anguste testaceo-marginatis; capite permagno, sparsim obsolete punctulato, utrinque inter oculos impresso, sutura clypeali profunde sulcata; prothorace quam longiori fere duplo latiori; postice quam antice vix angustiori, leviter canaliculato, latitudine majori paullo ante medium sita, lateribus sat anguste reflexis fortiter arcuatis ante basin sinuatis, angulis posticis sat acute rectis anticis sat rotundatis sat prominentibus; elytris fortiter striatis, interstitiis leviter convexis (3° pone medium punctura setifera instructo); tibiis anticis ad apicem processu magno acuto extus armato et supra hunc denticulis 5 parvis; tibiis posterioribus 4 extus denticulis circiter 8 instructis et ad apicem dilatatis. Long., $6\frac{1}{2}$ l.; lat., $2\frac{1}{2}$ l.

Remarkable by the strongly defined external sculpture of its tibiæ. *P. Horni*, Sloane, has an apical external process on the front tibiæ, but in that species it is shorter and blunter and the denticulations above it are very much smaller; no other *Phorticosomus* known to me has a similar tibial structure. In other respects this species resembles the insect that Mr. Sloane agrees with me in regarding as *P. grandis*, Cast., but has a considerably more strongly transverse prothorax, that segment being scarcely less (by measurement) than twice as wide as long.

Tropical Queensland; taken by Mr. T. W. G. Blackburn.

LOXANDRUS.

L. micantior, sp. nov. Modice elongatus, postice nonnihil dilatatus; minus depressus; niger, certo adspectu violaceo-iridescent, tibiis antennisque picescentibus, palpis tarsisque ferrugineis; oculis modice convexis; prothorace quam longiori circiter ut 5 ad 4 latiori, antice quam trans basin multo angustiori, longitudinaliter canaliculato, postice

fortiter minus crebre punctulato, utrinque ad basin sulco elongato longitudinali impresso, antice leviter emarginato, angulis posticis obtusis, latitudine majori vix ante medium sita, lateribus sat arcuatis anguste (postice magis late) reflexis; elytris fortiter striatis, striis crenulatis, stria abbreviata scutellari nulla, interstitiis sat anguste sat fortiter convexis (3° ante medium punctura instructo). Long., 4 l.; lat., $1\frac{1}{2}$ l.

Differs from all other Australian *Loxandri* known to me or which I can ascertain to have been described, by the evident reflexed margin of its pronotum (the furrow of which is somewhat rugulose) and by the strong puncturation across the base of that segment. *Feronia* (*Pæcilus*) *rufilabris*, Cast., seems to be a *Loxandrus*, and is said to have its prothorax "punctated" behind, but the prothorax of that species is said to be broader in front than behind, and there is no indication of any unusual character in the lateral margin.

N. Queensland.

NITIDULIDÆ.

OMOSITA.

O. discoidea, Er. I have before me specimens of this insect taken in Tasmania by Mr. Griffith. I believe it has not been hitherto recorded as Australian.

LAMELLICORNES.

COPTODACTYLA.

C. glabricollis, Hope. This name was associated by its author with a very brief description of a specimen (which was evidently a female) from Port Essington, on the north coast of Australia. Harold (Ann. Mus. Gen., 1877, p. 39) furnishes a full description of both sexes of a species which he considers to be that of Hope. It is unfortunate that he states neither the ground of his identification nor the locality where his specimens were taken. It is to be noted that the size he attributes to the insect (15-16 mm.) is much greater than that quoted by Hope (5 l.). I believe, however, that the identification is correct. I have before me a long series of specimens of *Coptodactyla* from various localities in Northern Australia (including some from near the original locality) which I regard as appertaining to one very variable species; and among them are some certainly identical with those described by Harold. None of these examples, however, are quite so small as Hope's measurements, or quite so large as Harold's. They vary in color from red-brown to deep black; in size from $5\frac{1}{2}$ l. to $7\frac{1}{2}$ l., and also very greatly in the development of the frontal horn in the male, which in some

examples is represented only by a scarcely elevated and very short transverse carina and in successive developments becomes a well elevated carina, then a carina so much elevated as to be a strong tubercle, then a short horn, and eventually a fairly long horn. After careful examination of this series I cannot find any character to rely upon for regarding these forms as representing more than one species—the sculpture of the surface (*e.g.*) being identical in them all and agreeing with Harold's description. I notice that the males differ from the females in the very evidently less transverse form of their pygidium.

C. ducalis, sp. nov. Fem. Oblonga; sat convexa; nitida; nigra; antennis ferrugineis; capite antice undulatum ruguloso, postice sat manifeste punctulato, clypeo antice obtuse bidentato; pronoto in disco vix manifeste (angulos anticos versus subfortiter) punctulato, puncturis sat magnis prope marginem basalem impresso, stria marginali trans apicem continua, carina sublaterali a fovea sublaterali oblique ad marginem lateralem ut *C. glabricollis*, Hope, producta; elytris sat profunde striatis, striis obsolete punctulatis (8^a antice abbreviata, 9^a ante medium cum margine laterali confusa); pygidio convexo lævi. Long., $8\frac{1}{2}$ l.; lat., $4\frac{1}{2}$ l.

Larger than any of the three previously described Australian species. Differs *inter alia* from *glabricollis*, Hope, by the very much finer puncturation of its elytral striæ; from *Baileyi*, Blackb., by the emarginate front margin of its clypeus; and from *subcænea*, Harold, by its non-metallic elytra, and by its pronotum punctured like that of *glabricollis*, and having the marginal stria continuous across its front (as in *glabricollis*).

N. Queensland (Mr. Cowley).

ONTHOPHAGUS.

Australian species of this cosmopolitan and extremely plentiful genus have been described under 105 names. Fourteen of them have been set aside (and stand so in Masters' Catalogue) as synonyms, but two of those fourteen (*desectus*, Macl., and *inermis*, Macl.) I believe to be good species, as indicated more particularly below, the rest (so far as I have means of judging) being rightly treated by Masters. There are, however, nine names treated by Masters as valid (or published at a later date than that of his Catalogue) (*viz.*, *quinquetuberculatus*, Macl.; *Schmeltzi*, Har.; *deventus*, Macl.; *discolor*, Hope; *decurio*, Lansb.; *promptus*, Har.; *patruelis*, Har.; *Duboulayi*, Waterh.; and *hostilis*, Har.) which appear to me to be more or less certainly synonyms and on which notes will be found below. I also suspect,—but am less confident,—that *propinquus*, Macl.;

ntegriceps, Macl., and *humeralis*, Macl., are synonyms. These also are discussed below. Consequently of the 105 names under which Australian *Onthophagi* have been described I regard only 84 at most as at present deserving to stand, and to these I now add 26 new species, bringing up the total number to 110.

The descriptions of the Australian *Onthophagi* are scattered through the Transactions of a great number of Societies,—European and Australian,—and the types through a great number of European and Australian Museums; probably not a few of the types have perished. Many of the descriptions,—especially those of the species from the Port Essington region and from the far North of W. Australia,—are of so slight a character as to be absolutely useless without examination of the types or at least of specimens known to be from the original locality. Under these circumstances there is no one in a position to deal with the Australian *Onthophagi* in any final or authoritative manner. The only method by which such an end can be even approached is that of the provision, by someone possessing data that are at least exceptionally plentiful, of a memoir bringing together the results of a careful study of all the existing descriptions and indicating the characters of the different species in a collective form. This can be no more than a provisional treatise, but it will at least be a foundation for further investigation, and the (probably numerous) inaccuracies that such a tentative revision must contain can be corrected by those who have the means of examining the types that its author has not had access to. Such an essay seems to be the inevitable first step towards a satisfactory treatment of the subject. I happen to possess, or have access to, a considerable number of specimens from the localities that I have mentioned above as those of the most insufficiently described Australian *Onthophagi*, and therefore have been able to identify with some confidence most of Hope's species. The specimens referred to were taken by my friend the late Dr. Bovill, by Mr. J. G. O. Tepper, and by Inspector Feelsche,—those of the last two named being in the S. Australian Museum. I think, therefore, that I am in a somewhat exceptionally favorable position for furnishing a tentative revision of the Australian *Onthophagi* which I now lay before the Royal Society of S. Australia, not with the expectation that it will prove in all respects accurate, but with the hope that it may prove to be a fresh starting point and will elicit information from various sources by means of which something more satisfactory may follow. I trust it will be found possible at least to identify by means of the following descriptions and notes the insects to which I attribute the various specific names and if so it will be easy for those who have access to types that are not within my reach to call attention to the points that require amendment.

Of the 84 already described Australian *Onthophagi* that seem likely to be valid species, 53 are, I think, before me, leaving 31 which I have not to my knowledge seen. In the following pages there will be found first a tabulation of these 53 species and of the 26 new ones described below; second, descriptions of the new species and notes on a good many of the older ones; third, a tabulation of the characters of the species not known to me drawn up after careful study of the descriptions of their authors (this, of course, has to be founded on such characters—often very unsatisfactory—as the authors have happened to mention); and fourth, a few notes on each of the species not known to me, quoting where it seems desirable the salient points in the descriptions. This last part seems necessary in order to render the memoir complete, although in several instances I have been able only to furnish a brief abstract of notes that are not readily accessible in Australia.

To the difficulties I have already indicated as hindering a satisfactory treatment of the Australian *Onthophagi* must be added this, that there is no genus in which the difference between the sexes is in most species more strongly marked or more variable, while at the same time, so far as I know, there is no invariable external character by which the sex of a specimen can be determined positively. I believe that elongation of the front tibiae is invariably a male character, but there are many species in which the tibiae of the male are not elongated; similarly, a great development of frontal protuberances is usually a male character, but in most (if not all) species these characters are enfeebled in some males to the extent of being unrecognisable, and in a few species the frontal protuberances are stronger in the females than in the males. The front of the pronotum is, I think, never more complex in the female than in the male, and in general it is similar in character in both sexes of a species, but more feeble in development in the female, but there are a few species in which it is *essentially* different in the sexes. It is not usual for the puncturation of the pronotum and elytra to differ much sexually, but here again there are exceptions. Nevertheless, it has been the general practice of authors to form subdivisions of the genus on the sexual characters. De Harold, for instance, Ann. Mus. Gen., 1877, p. 51, says that the primary divisions are dependent on whether the male frontal protuberances are median or lateral. There is no need to discuss here the soundness of that opinion in the abstract, though I may say in passing that as far as I am concerned I do *not* believe the sexual characters to be the most fundamental, but the practical inconvenience of such a classification is obvious—so obvious, indeed, that there is no occasion to do more than just mention it.

The non-sexual characters that I find to be most reliable for distinguishing species are in the basal structure of the pronotum (this character is recognised by Dr. Erichson in the "Insecten Deutschlands" for sub-dividing *Onthophagus*), the size and structure of the eyes, the coloring (metallic or non-metallic) of the surface, the puncturation (which does not usually vary sexually to any considerable extent), the presence or absence of pilosity on the upper surface, and the structure of the claws.

For tabulating the genus, as regards its Australian species, I adopt six divisions founded primarily on the structure of the base of the pronotum, which assumes four different forms, and secondarily on the structure of the eyes.

In the first group the lateral gutter and marginal raised edging of the pronotum pass evenly across the base without the lateral edging becoming enfeebled close to the hind angles, and the eyes are wide, nitid, and not perceptibly faceted on the surface.

In the second group the base of the pronotum is as in the first group, except that the raised edging is suddenly and notably enfeebled close to the hind angles; while the eyes are as in the first group.

In the third group the structure of the pronotum is as in the second group, but the eyes are very distinctly faceted.

In the fourth group the base of the pronotum is not strictly speaking margined, but it is *visible* as a narrow more or less flattened band,—this pseudo-margin being most conspicuous when looked at obliquely from behind. The eyes are variable in structure.

In the fifth group the base of the pronotum has no gutter or flattened space but is bordered by a more or less defined raised edging. In many instances care is necessary in examining this edging to avoid confusing it with a fine carina-like projection hindward on the hind face of the base of the pronotum which is present in (at least most of) the *Onthophagi* and seems to be related to a depression on the front face of the elytra. The eyes in this group are variable in structure.

In the sixth group the base of the pronotum is absolutely even and not bordered by any gutter, raised line or depression. The structure of the eyes is variable.

It would be possible to increase the number of groups by three if full use were made of the characters of the eyes in Groups 4, 5, and 6; but as this would remove into different groups species that seem too closely related for such separation I have contented myself with the six groups specified above. As it is, there are species which seem to connect Groups 4 and 5 rather closely with Group 6, but such overlapping is almost always met with in the division of an extensive genus into groups.

The following tabulation shows the relation to each other of the groups:—

- A. Raised marginal edging of sides of pronotum continues evenly along the base (all the known species large and rugulose) Group I.
- AA. The raised marginal edging of sides of pronotum becomes at least enfeebled at the hind angles.
- B. Pronotum bordered at base by a distinct gutter and raised edging.
- C. Eyes not visibly faceted on surface Group II.
- CC. Eyes distinctly faceted on surface Group III.
- BB. Pronotum bordered at base only by a pseudo-margin (as described above) Group IV.
- BBB. Pronotum bordered at base only by a raised line Group V.
- BBBB. Pronotum not margined at base Group VI

It should be added that occasional specimens of those *Onthophagi* the surface of whose eyes is not perceptibly faceted have the eyes of a pale colour,—perhaps due to immaturity,—and that in that case underlying facets are quite conspicuous through the smooth surface, but there is not any difficulty in seeing that the surface itself is quite smooth.

In the following tabulation the characters cited (unless otherwise stated) are as far as known to the author common to both sexes.

It is quite possible that the examination of the other sex of some few species of which I have seen only one sex may prove that I have in tabulating relied upon characters that are not truly specific in respect of those particular species, but I am very confident that all the *Onthophagi* before me and tabulated below as distinct species, are really so.

Tabular statement of the characters of the Australian *Onthophagi*:—

GROUP I.

- A. A horn or tubercle in both sexes on pronotum between median protuberance and lateral margin.
- B. The frontal projection in both sexes a horn pentacanthus, *Har.*
- BB. The frontal projection in both sexes a lamina Leai, *Blackb.*
- AA. No horn or tubercle in either sex on pronotum between median protuberance and lateral margin.
- B. The front of the frontal horn rugulose and opaque Mniszechii, *Har.*
- BB. The front of the frontal horn (at any rate in the male) nitid and almost smooth ... ferox, *Har.*

GROUP II.

- A. Front of pronotum subvertical (in both sexes so far as known).
- B. The retuse front topped by a widely arched carina and (on each side) a tubercle.
- C. The basal gutter of the pronotum dilated hindward in the middle.

- D. Lateral edging of pronotum in front of middle strongly raised.
- E. Interval between the two external tubercles of pronotum not or scarcely wider than head.
- F. Hind part of pronotum very nitid and mostly smooth ... *laminatus, Macf.*
- FF. Pronotum (except retuse front) entirely rugulose and but little nitid ... *Cowleyi, Blackb.*
- EE. Interval between the two external tubercles of pronotum much wider than head... *atrox, Har.*
- DD. Lateral edging of pronotum much finer and much less elevated ... *Palmerstoni, Blackb.*
- CC. Basal gutter of pronotum not dilated hindward in middle.
- D. Clypeal carina angularly elevated in middle.
- E. Clypeal carina strongly angulate on either side before reaching margin *Sloanei, Blackb.*
- EE. Clypeal carina not angulate laterally ... *pugnax, Har.*
- DD. Clypeal carina not angularly elevated in middle ... *pugnacior, Blackb.*
- BB. Retuse front of pronotum not as in "B."
- C. Front of clypeus emarginate ... *capitosus, Har.*
- CC. Front of clypeus widely and very feebly (or not) sinuous ... *nodulifer, Har.*
- AA. Retuse front of pronotum very oblique, and descending from *at* (or behind) the middle.
- B. Less nitid. Declivous front of pronotum scarcely carinate longitudinally ... *declivis, Har.*
- BB. More nitid. Declivous front of pronotum strongly carinate down middle ... *desectus, Macf.*
- GROUP III.
- A. Dorsal surface devoid of metallic colouring (retuse front of pronotum topped by two subcontiguous protuberances).
- B. Pronotum not (or scarcely) punctulate ... *macrocephalus, Kirby.*
- BB. Pronotum closely and quite strongly punctulate ... *capella, Kirby.*
- AA. Dorsal surface green, more or less metallic (retuse front of pronotum topped by four protuberances).
- B. Dorsal surface opaque ... *Bovilli, Blackb.*
- BB. Dorsal surface nitid ... *conspicuous, Macf.*
- GROUP IV.
- A. Eyes not (or scarcely) perceptibly faceted on surface.
- B. Retuse front of pronotum topped by strong protuberances ... *Erichsoni, Hope.*
- BB. Retuse front of pronotum not topped by protuberances.
- C. Front of pronotum with a fine median longitudinal carina ... *Howitti, Blackb.*

- CC. Front of pronotum even.
 D. Hind claws large, and at base almost rectangularly bent.
 E. Disc of metasternum non-punctulate Kingi, *Har.*
 EE. Disc of metasternum coarsely punctulate ... parvus, *Blanch.*
 DD. Claws fairly large, but of normal structure.
 E. Disc of metasternum non-punctulate glabratus, *Hope.*
 EE. Disc of metasternum with coarse punctures.
 F. Head not bicarinate in either sex.
 G. Front of clypeus emarginate ... Murchisoni, *Blackb.*
 GG. Front of clypeus not emarginate ... fitzroyensis, *Blackb.*
 FF. Head bicarinate (at any rate in one sex) ... queenslandicus, *Blackb.*
- AA. Eyes conspicuously faceted on surface.
 B. Eyes comparatively wide.
 C. Retuse front of pronotum topped by a strong carinate protuberance ... picipennis, *Hope.*
 CC. Retuse front of pronotum protuberant, but not carinate ... bicornis, *Mach.*
- BB. Eyes much narrower.
 C. Pygidium not clothed with long or close white or silvery pubescence.
 D. Sides of pronotum decidedly (or strongly) sinuate behind middle.
 E. Upper surface more or less metallic (if only slightly, then densely opaque).
 F. Sides of pronotum not sinuate in front of middle.
 G. Pronotum subnitid, quite strongly punctulate ... australis, *Guér.*
 GG. Pronotum opaque, its puncturation very faint.
 H. Crenulations of elytra distinctly punctiform ... anisocerus, *Er.*
 HH. Crenulations of elytra not punctiform ... fuliginosus, *Er.*
 FF. Sides of pronotum strongly sinuate in front of middle ... tweedensis, *Blackb.*
 EE. Black, not at all metallic ... Mastersi, *Mach.*
 DD. Sides of pronotum non-sinuate behind middle ... pexatus, *Har.*
- CC. Pygidium clothed with long (or at least dense) whitish or silvery pilosity.
 D. The dorsal surface (except pygidium) glabrous or nearly so.
 E. Neither pronotum nor elytra bicolorous.
 F. Punctures of elytral striæ large and coarse ... cuniculus, *Mach.*
 FF. Punctures of elytral striæ fine.
 G. Clypeal carina strongly angulate on either side ... auritus, *Er.*

- GG. Clypeal carina not or scarcely angulate at sides (at any rate in male) *Walteri, Macl.*
 EE. Both pronotum and elytra bicolorous *rufosignatus, Macl.*
 DD. Dorsal surface clothed with dense erect pilosity *granulatus, Bohem.*

GROUP V.

- A. Eyes comparatively wide scarcely visibly faceted on their surface.
 B. Elytra clothed with conspicuous erect setæ (size moderate; Long., 4 l.) *Macleayi, Blackb.*
 BB. Elytra glabrous (size very small).
 C. Elytral interstices convex, closely and conspicuously punctulate *Helmsi, Blackb.*
 CC. Elytral interstices flat, very sparsely and inconspicuously punctulate *Koebele, Blackb.*
 AA. Eyes narrow, conspicuously faceted.
 B. Elytra clothed with long conspicuous pilosity *aureo viridanus, Blackb.*
 BB. Elytra not clothed with long pilosity.
 C. Pronotum very coarsely and closely rugulose (size large, Long. 5 l. or more) *rugosus, Kirby.*
 CC. Pronotum finely and confluent asperate.
 D. Elytra tuberculate *Haagi, Har.*
 DD. Elytra not tuberculate *Adelaidæ, Hope.*
 CCC. Pronotum conspicuously and not confluent punctulate.
 D. Basal joint of hind tarsi strongly compressed, and strongly crenulate on margin *consentaneus, Har.*
 DD. Basal joint of hind tarsi normal.
 E. Eyes notably less narrow than in the species under "EE."
 F. Pronotum evenly convex in hind part *mutatus, Har.*
 FF. Pronotum distinctly sulcate longitudinally in hind part.
 G. Sides of prothorax very distinctly sinuate behind middle.
 H. Basal edging of pronotum strong and thick *victoriensis, Blackb.*
 HH. Basal edging of pronotum much finer *Tamworthi, Blackb.*
 GG. Sides of pronotum scarcely sinuate behind middle *Frenchi, Blackb.*
 EE. Eyes extremely narrow, sublinear.
 F. Pronotum more or less strongly sulcate longitudinally in hind part.
 G. Puncturation of pronotum extremely coarse (and the general surface nitid) in both sexes *henleyensis, Blackb.*
 GG. Puncturation of pronotum evidently less coarse (in both sexes).

- H. Long pilosity on front part of dorsal surface of pronotum in both sexes ... *jubatus, Har.*
- HH. Pronotum non-pilose.
- I. General surface opaque, pronotum extremely closely punctulate (in both sexes) ... *nanus, Waterh*
- II. General surface nitid, pronotum not closely punctulate (at least in one sex) ... *pontilis, Blackb.*
- FF. Pronotum without any trace of longitudinal sulcus.
- G. Antennal club obscure.
- H. Puncturation of elytral interstices (especially near suture) fine and sparse,—at least in male ... *Zietzi, Blackb.*
- HH. Puncturation of elytral interstices (and of the striae) very much coarser ... *nitidior, Blackb.*
- GG. Antennal club yellow ... *blackwoodensis, Blackb.*

GROUP VI.

- A. Eyes wide, their surface not (or but little) perceptibly faceted.
- B. Dorsal surface clothed with pilosity ... *latro, Har.*
- BB. Dorsal surface not pilose.
- C. Surface of eyes very nitid, not perceptibly faceted.
- D. Claws moderate, normally arched ... *pronus, Er.*
- DD. Claws large, bent almost rectangularly at base.
- E. Disc of metasternum impressed with coarse punctures.
- F. Greatest width of prothorax (viewed from above) considerably in front of middle ... *submuticus, Blackb.*
- FF. Greatest width of pronotum (viewed from above) at middle
- EE. Disc of metasternum devoid of coarse punctures ... *inermis, Macl.**
- CC. Surface of elytra much less nitid,—evidently faceted ... *muticus, Macl.*
- Comperei, *Blackb.*
- AA. Eyes narrow, their surface conspicuously faceted (quite granulate).
- B. Dorsal surface setose or pilose.
- C. The elytral interstices equal (or nearly so) *inter se*.
- D. Elytral striae shallowly sulciform (as wide as the interstices) ... *geelongensis, Blackb.*
- DD. Elytral striae narrow (very much narrower than the interstices).
- E. Dorsal surface metallic... *margaretensis, Blackb.*
- EE. Dorsal surface non-metallic ... *Fletcheri, Blackb.*

* The single specimen before me that I take to be this insect has lost its claws, but it is so evidently close to *muticus*, Macl., &c., that I have no doubt its claws are like those of *muticus*.

- CC. Alternate elytral interstices strongly elevated asper, *Macl.*
- BB. Dorsal surface not setose nor pilose.
- C. Elytra opaque and densely coriaceous, with flat almost punctureless interstices posticus, *Er.*
- CC. Elytra not as in *posticus*, *Er.*
- D. Neither pronotum nor elytra bicolorous.
- E. Pronotum not confluent punctulate.
- F. Punctures of elytral striæ well defined, not confused with those of the interstices (which are much finer).
- G. Pronotum with an evident longitudinal sulcus in hind part.
- H. Front part of pronotum rugulose. Size moderate, more than 4 l. long Dunningi, *Har.*
- HH. Front part of pronotum not rugulose. Size small, less than 3 l. long Dumbrelli, *Blackb.*
- GG. Pronotum evenly convex across hind part sydneyensis, *Blackb.*
- FF. Punctures of elytral striæ much confused with coarse interstitial puncturation negatorius, *Blackb.*
- EE. Pronotum confluent and asperately punctulate subocelliger, *Blackb.*
- DD. Pronotum unicolorous, elytra bicolorous.
- E. Elytra opaque rubrimaculatus, *Macl.*
- EE. Elytra nitid.
- F. Elytral interstices finely punctulate quadripustulatus, *Fab.*
- FF. Elytral interstices coarsely punctulate bipustulatus, *Fab.*
- DDD. Both pronotum and elytra bicolorous cruciger, *Macl.*
- O. *Cowleyi*, sp. nov. Latus; robustus; supra glaber; subtus fulvo-hirtus; subnitidus; ferrugineus vel piceus, antennarum clava rufo-testacea; clypeo transversim rugato; sutura clypeali carinata; carina frontali ut lamina erecta utrinque leviter vel vix sursum producta; oculis convexis, vix manifeste granulatis, latis (horum latitudine quam antennarum clavæ vix minori); prothorace quam longiori ut 18 ad 11 latiori, supra antice retuso, parte retusa lævi vel potius obsolete punctulata, cetera parte grosse fortiter rugulosa postice longitudinaliter impressa, parte dorsali media antice carina forti transversa arcuata integra marginata tuberculo sat magno conico utrinque pone oculum supra partem retusam sito, fovea magna laterali fortiter impressa, lateribus modice arcuatis antice et postice sat fortiter sinuatis,

angulis anticis sat dentiformibus posticis obtusis, sulco laterali marginali trans basin continuo in medio manifeste subangulatum retrorsum dilatato, carina marginali laterali trans basin minus perspicue continua; elytris leviter crenulato-striatis, crenulis quam striæ vix latioribus, interstitiis subtiliter coriaceis parum convexis leviter (latera versus magis profunde) punctulatis; pygidio coriaceo sat crebre minus profunde punctulato; metasterno coriaceo sat sparsim subgrosse punctulato.

Maris clypeo antice sat producto plus minusve emarginato, lateribus antice sinuatis; tibiis anticis sat elongatis, minus latis, extus sat fortiter 4-dentatis.

Feminae clypeo antice vix producto subtruncato, lateribus antice haud sinuatis; tibiis anticis minus elongatis magis fortiter 4-dentatis. Long., 7—8½ l.; lat., 4—4½ l.

There is very little reliable external difference between the sexes except in the form of the clypeus and the structure of the front tibiæ. In a well developed male the ends of the frontal lamina are produced upward as quite strong teeth; in the female and in some males this upward dilatation is quite slight. Looked at from in front the whole dorsal surface of the head behind the clypeal carina seems to consist of this frontal lamina,—the surface sculpture of which varies considerably (from being strongly to only lightly rugulose) and does not depend on sex. The species which I regard as *O. atrox*, Har., is very close to *O. Cowleyi*, differing from it chiefly by the hinder elevation on its head being in the male a mere transverse cariniform line, by the transverse carina above the retuse front of the pronotum having its extremities so far from each other that each of them is directly behind the middle of one of the eyes, by the same carina running in the form of two sides of a triangle the apex of which is truncate and slightly emarginate, by the retuse front of the pronotum being pilose and punctulate, by the interstices of the elytra being flatter, more opaque, and less distinctly punctulate, and by the distance between the external tubercles of the pronotum being a little less than the width of the head.

N. Queensland (sent by the late Mr. Cowley).

O. laminatus, MacL. I think I have correctly identified this insect. The sculpture of the front part of the pronotum is very insufficiently described, and there are several species that fit the description in this respect; but in characterising the *puncturation* of the pronotum Sir W. Macleay says "the greater portion of the rest of the prothorax is punctured," and I find one species (and one only) of this group to which those words apply satisfactorily since on its pronotum the coarse rugulosity that occupies the area immediately behind the retuse front becomes rapidly

obsolete hindward and is very faint or altogether wanting on nearly the hinder half of the dorsal surface. Apart from the character just referred to, this insect is very close to *O. Cowleyi*, Blackb. The arched transverse carina of the pronotum is however less strongly arched, with its extremities further from each other; the extremities of the frontal lamina are (in all the examples before me) much more strongly produced upward than in *O. Cowleyi* of same sex; and the front tibiae of the male are notably more slender and elongate, there being about nine crenulations on the external outline above the uppermost of the large teeth, while in *O. Cowleyi* there are only six or seven. The distance between the external tubercles of the pronotum is less than the width of the head.

O. quinque tuberculatus, MacL. Some years ago while staying in Sydney I inspected the type of this insect, and made a note against it in my Catalogue "*?=atrox*, Har." I do not attach much importance to this note inasmuch as it was probably not founded on comparison with, but only on memory of, *atrox*; nevertheless I have little doubt from the description of *5-tuberculatus* that it is identical with the insect that I believe to be *atrox*, because that is the only *Onthophagus* (of this Group) known to me as inhabiting Eastern Australia the structure of whose pronotum would be likely to suggest the name *5-tuberculatus* and because the description contains no mention of any other character inconsistent with identity, unless it be the expression "finely punctulate" applied to the insect in general, which does not suit *atrox* except in respect of the elytra. It must be noted however that Macleay is extremely vague in describing the puncturation of the different parts of his *Onthophagi*, not always referring to it at all and in other instances only using the word "punctulate." At any rate if *5-tuberculatus* is not *atrox* it is a species I have not seen, and I have examined a large number of *Onthophagi* from Queensland (its habitat).

O. atrox, Har. From the above notes (on the preceding species) the *Onthophagus* that I have called by this name will be easily identified. It is the only one of this group known to me having the retuse front of its pronotum pilose. If my identification is incorrect it can easily be corrected by anyone who can examine the type of *atrox*. It can be regarded as having 5 tubercles placed in a transverse line along the summit of the retuse front of the pronotum, inasmuch as each extremity of the transverse carina is slightly prominent in most examples and the middle of the carina by a little stretch of imagination may be counted as a somewhat bifid tubercle. The external tubercle on either side is well defined. The interstices of the elytra are

very flat opaque and very finely punctulate, especially those near the suture. The frontal carina is very feeble in the male and not elevated into a tooth or horn (at most only angular) at its extremities in either sex. The distance between the external tubercles of the pronotum is a little greater than the width of the head.

O. Palmerstoni, sp. nov. Sat brevis, lateribus sat rotundatis; supra glaber; subtus fulvo-hirtus; modice nitidus; obscure rufus, antennis dilutioribus; capite fere ut *O. Cowleyi*, sed lamina frontali ad latera nullo modo elevata et oculis non-nihil angustioribus; prothorace fere ut *O. Cowleyi* sed supra minus crebre ruguloso (basin versus haud ruguloso sed concinne subsparsim minus profunde punctulato), parte subbasali ipsa anguste laevi opaca, angulis posticis magis definitis; elytris subtiliter crenulato-striatis, striis subnitidis, crenulis quam striae nullo modo latioribus, interstitiis planis (latera versus leviter convexis) opacis coriaceis vix manifeste punctulatis; pygidio coriaceo, leviter sparsim punctulato; metasterno coriaceo sat sparsim modice punctulato Maris(?) clypeo antice minus producto subemarginatum truncato, lateribus antice vix sinuatis; tibiis anticis modice elongatis, minus latis, extus sat fortiter 4-dentatis. Long., $5\frac{3}{4}$ l.; lat., $3\frac{1}{5}$ l.

The unique specimen before me of this insect has front tibiae scarcely so long and narrow as those of the male of *O. Cowleyi* but much more so than those of the female of that species; I think therefore that it is a male. There are about 7 crenulations on the edge of the front tibiae above the uppermost of the large teeth. The most satisfactory characters for distinguishing it from the other *Onthophagi* of this group seem to be the puncturation of the pronotum and the surface sculpture of the elytra. The former does not (as it does in *O. laminatus*, Macl.) become faint and scarcely impressed behind the middle, but changes from being (in the middle of the dorsal surface) close and rugulose vermiculate sculpture to become behind the middle isolated deeply impressed sparse strong non-rugulose punctures. The distance between the external tubercles of the pronotum is less than the width of the head. The elytral striae are exceptionally fine and the dorsal interstices absolutely flat and as opaque as those of the species referred to above as *O. atrox*, Har.,—so that (as in the latter) the striae appear nitid in contrast. The pronotum is more nitid than in any other *Onthophagus* known to me (of this group) except *laminatus*, Macl. The absence of upward projection at the ends of the frontal lamina distinguishes this insect from *laminatus* and *Cowleyi* of both sexes but the degree of upward projection in those species varies too much to justify

laying much emphasis on this character on the strength of a single specimen. Viewed from in front the frontal lamina looks to be a nitid almost punctureless quadrate plate sloping hindward and upward from the clypeal carina (which forms its base) and having all its sides sharply defined right lines or nearly so (which is the case also with specimens of *O. Cowleyi* having a feebly developed lamina but no other known to me of the group) Viewed from behind the frontal lamina looks like that of the female of the Brisbane species which I take to be *O. pugnax*, Har. (*vide infra*) while in *O. Cowleyi* the corresponding lamina looks quite different owing to the upward projection being (in all specimens examined) quite conspicuous. This is the smallest *Onthophagus* I have seen of this group.

N. Australia (Palmerston).

O. Sloanei, sp. nov. Latus; robustus; supra glaber; subtus fulvo-hirtus; opacus (pronoto capiteque leviter subnitido); ater, antennis rufo-testaceis; capite minus lato, ante oculos parum dilatato; clypeo transversim rugato antice angulatim emarginato; capitulis parte inter carinas crebre fortiter punctulata, sutura clypeali carinata in medio leviter angulatim elevata; oculis ut *O. Cowleyi*, Blackb.; prothorace quam longiori ut 11 ad 7 latiori, supra antice retuso, parte retusa sat manifeste sat crebre punctulata, cetera parte grosse fortiter rugulosa postice longitudinaliter vix impressa, parte dorsali media antice carina transversa arcuata (hac in medio profunde sinuata et utrinque tuberculo parvo terminata) marginata, tuberculo sat magno conico utrinque sito, fovea magna laterali fortiter impressa, lateribus angulisque ut *O. Cowleyi*, sulco laterali marginali trans basin continuo in medio subangulato sed vix dilatato, carina marginali laterali trans basin sat fortiter continua; elytris obsolete (latera versus minus obsolete) crenulato-striatis, crenulis quam striæ haud latioribus, interstitiis planis (lateralibus leviter convexis) coriaceis (humeris nitidis haud coriaceis) sparsim subtilissime (latera versus magis fortiter) punctulatis; pygidio coriaceo et metasterno sat fortiter punctulatis.

Maris carina frontali quam clypealis vix magis elevata; tibiis anticis sat elongatis, minus latis extus sat fortiter 4-dentatis.

Feminae carina frontali sat elevata, utrinque sursum producta; tibiis anticis minus elongatis, magis latis, extus magis fortiter 4-dentatis. Long., $7-7\frac{2}{3}$ l.; lat., $4-4\frac{1}{3}$ l.

To a casual glance extremely like the species called *O. atrox*, Har. (above), but differing from it (independently of sexual characters) by the clypeus strongly emarginate in both sexes, the glabrous retuse front of the pronotum, the narrower head (very

little expanded in front of the eyes) and the base of the pronotum with its marginal furrow rather narrow and not dilated and flattened in the middle, and its marginal raised edging much stronger. The distance between the external tubercles of the pronotum is much greater than the width of the head. I have named this species after Mr. T. G. Sloane, who is doing such admirable work on the Australian *Carabidæ*.

N.W. Australia.

O. pugnax, Har. Judged by the description this species must be very close to *O. atrox*, Har., although its author does not refer to the other in the description of either. I have examples of an *Onthophagus* from Brisbane (the habitat cited by Harold) which I think must be *pugnax*, and they are extremely close to the species that I have (above) called *atrox*. They are of shorter and broader build and are not so opaque; the retuse front of their pronotum is not pilose and the structure of the base of their pronotum is as in *O. Sloanei*, from which species they differ *inter alia* in the front of their clypeus not being emarginate. The distance between the external tubercles of their pronotum is greater than the width of the head. The differences between *pugnax* and *atrox* in respect of the sexual characters of the head appear to be chiefly in degree rather than kind, and I cannot attach very much importance to them.

O. pugnacior, sp. nov. (mas). *O. Sloanei*, Blackb., maris affinis; differt capite pronotoque paullo minus nitidis; illo latiori, ante oculos sat fortiter dilatato; clypeo brevi latissimo antice rotundato; carina clypeali subobsoleta, in parte mediana nullo modo elevata, carina frontali antrorsum fortiter arcuata; pronoti parte retusa subobsolete punctulata, dorso minus fortiter ruguloso, carina arcuata transversa leviter tantum sinuata nullo modo tuberculata; elytrorum humeris coriaceis haud nitidis; metasterno (lateribus exceptis) multo minus fortiter punctulato. Long., $7\frac{3}{4}$ l.; lat., 4 l.

This species is so closely allied to *O. Sloanei*, that it seems useless to repeat the diagnosis at full length; the diagnosis applies exactly to this species except in so far as specified above. The extreme feebleness of the clypeal carina makes the frontal carina (without being absolutely more elevated than in *Sloanei*) much more elevated in comparison with the former. The external teeth of the front tibiae are much more feeble in my example of *pugnacior* than in *Sloanei*, but I doubt whether this is a constant character. The structure of the basal margin of the pronotum readily distinguishes *pugnacior* from all the other species known to me of this group except *Sloanei* and the species mentioned above as *pugnax*, Har. It is even closer to the latter than to *Sloanei*, from which it differs in all the respects mentioned above.

as distinctions from *Sloanei* except the form of the front margin of the clypeus, and the structure of the transverse carina of the pronotum, in which it resembles *pugnax*. The frontal carina viewed from behind is an elevated line forming a regular strong curve with its convexity forward, while in *pugnax* and *Sloanei* it is sinuous with its median part widely and feebly curved in the opposite direction. The clypeus is much shorter and wider than in any other species known to me of this group. The distance between the external tubercles of the pronotum is a little greater than the width of the head.

N. Queensland.

- O. Bovilli*, sp. nov. Sat latus, supra glaber; subtus fulvo-hirtus; sat opacus coriaceus; obscurus viridis (corpore subtus et pygidio nigricantibus, elytris piceis parum viridescens), tarsi palpi antennisque ferrugineis (harum clava testacea); capite modice lato; clypeo transversim rugato antice truncato, sutura clypeali carinata; lamina frontali modice elevata, ad angulos vix prominenti; capite inter carinas ruguloso; oculis sat angustis, manifeste granulatis, prothorace quam longiori ut 18 ad 11 latiori, supra antice breviter retuso, parte retusa sat obsolete punctulata, cetera parte grosse crebre rugulosa postice longitudinaliter obsolete sulcata, parte dorsali media anguste antrorsum prominenti (et subcarinato-marginata) in medio emarginata, tuberculo sat magno utrinque sito, angulis anticis subdentiformibus posticis rotundato-obtusis, fovea laterali fortiter impressa, lateribus ante medium leviter (pone medium modice) sinuatis, sulco laterali marginali trans basin continuo haud in medio dilatato, carina marginali trans basin continua, basi leviter trisinuata; elytris leviter crenulato-striatis, crenulis quam striæ haud latioribus, interstitiis subconvexis crebrius sat obsolete punctulatis, humeris nitidis haud coriaceis; pygidio metasternoque obsolete punctulatis; tibiis anticis sat brevibus; unguiculis modicis. Long., $4\frac{1}{2}$ l.; lat., $2\frac{3}{5}$ l.

Very distinct from all the species of the *laminatus* group (with which group it agrees superficially and in most characters) by its conspicuously granulate and much narrower eyes. These resemble the eyes of *O. conspicuus*, Macleay, which is a very much more nitid and brilliantly metallic insect, with the pronotum in both sexes much less closely and rugulosely punctured, and with the punctures of the elytral interstices very much finer (indeed almost wanting). The type is in the S. Australian Museum. It is probably a female. Named after the late Dr. Bovill.

Northern Territory of S. Australia.

O. desectus, MacL. I agree with Mr. C. O. Waterhouse, Ann.

N.H. (VI.) XIV., that Harold was probably mistaken in regarding this species as a synonym of *declivis*, Har. I have before me a Queensland specimen which I compared some years ago with the type of *desectus* and found to be identical. It is, I think, certainly distinct from *declivis* from which (of same sex, female) it differs by its considerably more nitid surface, the quite strong emargination of the middle of the frontal carina, the much more conspicuous longitudinal carina occupying the middle of the retuse portion of the pronotum, and the much larger and deeper punctures of the metasternum. It would be interesting to know what species it was that Sir W. Macleay regarded as *declivis*, Har., in 1888, when he reported that species as occurring in N.W. Australia. If he considered it as identical with *desectus* (i.e., if by *declivis* he meant *desectus*) then in all probability the insect from N.W. Australia that he described (Proc. L.S., 1888, p. 899) under the name *devexus* as "very like *O. declivis*, but of a much coarser and rougher sculpture" was the true *declivis*. The remainder of the description fits *O. declivis*, Har., very well except in the mention of the frontal carina being "very minutely emarginate in the middle." I have not seen any example of *declivis* of either sex having that carina emarginate, but there is certainly sufficient tendency to variation in the frontal structure of the *Onthophagi* to render it very inexpedient to found a species upon slight differences in that character alone.

O. Schmeltzi, Har. I have no doubt but what this is a variety of *O. capella*, Kirby. There is absolutely nothing in its author's description and remarks to differentiate it from *capella* except the form of the frontal lamina in the male, and even that is a mere difference in the shape of the outline of the portion connecting the erect extremities.

O. macrocephalus, Kirby. Sat latus; supra glaber; subtus fulvo-hirtus; minus nitidus; niger, antennis ferrugineis, clava testacea; clypeo transversim rugato; sutura clypeali sat fortiter carinata; carina frontali sat alta; capite inter carinas nitido obsolete punctulato; oculis convexis manifeste granulatis, sat angustis (horum latitudine quam antennarum clavæ fere duplo minori); prothorace quam longiori ut 18 ad 11 latiori, supra antice retuso, fere lævi vel potius obsoletissime (latera versus paullo magis perspicue) punctulato, parte dorsali media antice tuberculis 2 (ut *O. capellæ*, Kirby) instructis, tuberculis inter hos et margines laterales nullis, fovea magna laterali fortiter impressa, lateribus fortiter arcuatis postice fortiter sinuatis, angulis anticis (ut *O. capellæ*) subobtusis posticis valde obtusis, sulco marginali laterali trans basin continuo in medio vix dilatato, carina marginali trans basin continua (prope angulos sat obsoleta,

in medio sat forti); elytris leviter crenulato-striatis, crenulis quam striae haud latioribus, interstitiis sat convexis coriaceis suturam versus obsolete (latera versus magis perspicue) punctulatis; pygidio coriaceo leviter minus crebre punctulato.

Maris clypeo antice sat producto-acuminato et reflexo, lamina frontali pervariabili (vel paullo supra oculos truncata, vel plus minusve sursum producta et acuminata).

Feminae clypeo antice sat late rotundato parum reflexo; lamina frontali minus elevata utrinque plus minusve sursum acuminata. Long., $6\frac{1}{2}$ — $7\frac{1}{2}$ l.; lat., $3\frac{2}{5}$ — $4\frac{1}{5}$ l.

It has seemed to me desirable to redescribe this species, as the original diagnosis is very brief and applies only to one sex. The development of the male characters varies to an extraordinary extent (from the form described by Kirby, down to a form in which the frontal elevation is merely a widely truncate feeble carina not much different from that of the female of *O. capella*). I have not, however, seen a male in which there is any upward projection of the ends of the frontal lamina,—this form being apparently distinctive of the female (though in some females exceedingly slight). The subacuminately produced, and somewhat strongly reflexed, clypeus of the male seems to be the most satisfactory distinction of that sex. I cannot satisfy myself that there is any workable distinction between the front tibiae of the sexes. The tubercles at the summit of the middle of the retuse front of the pronotum vary in size inversely with the size of the frontal lamina,—so that those tubercles are at their maximum in the female and at their minimum in a highly developed male. As a species this *Onthophagus* is very distinct, its only near ally known to me being *O. capella*, Kirby, which has a strongly punctulate pronotum, elytral interstices almost absolutely flat, &c.

N.S. Wales.

O. capella, Kirby. I have found a specimen which evidently appertains to this species (it is not even a variety) among some *Coleoptera* sent to me from Cape York by the late Mr. Cowley.

O. capitosus, Har. A single (female) example from Cape York in my collection seems to be this species, although if so it is a colour variety, the head and prothorax being piceous, the elytra and pygidium clear ferruginous. It has the short clypeal carina attributed to *capitosus*, and the front of the clypeus emarginate as described. The front of the pronotum is only very slightly retuse. This is a very isolated species; the base of its pronotum is as in *O. capella*, Kirby, but it differs from *capella* and the rest of its group by, *inter alia*, its eyes not distinctly granulate (as in *declivis*, Har.).

O. picipennis, Hope. I am fairly confident that I know this

species, but only because I have before me some examples from the neighbourhood (Port Essington) that Hope cites as its habitat. The description is quite insufficient, and the name absurd,—as the author himself in his diagnosis says “elytris nigris.” The phrase “thorace trigono” is very puzzling; I do not know of any *Onthophagus* that it would suit; following words describing the structure of the summit of the retuse front forbid the supposition that the phrase refers to that part having three angular projections. I have concluded that the reference must be to the strong dilatation of the prothorax near the front, making the front itself appear (when looked at casually, from behind, obliquely) very much wider than the base, so that with a little imagination the segment seems to have a certain resemblance to a triangle with the apex truncate. One of the specimens before me happened to be mounted in such a manner that this similarity is certainly traceable. The only other explanation I can suggest is that “thorace” may stand in error for “clypeo.” “Capite ante oculos furcato” I take to refer to the hornlike upward prolongment of the ends of the frontal lamina. The species before me varies in colour from reddish piceous to black and is nitid (the club of the antennæ testaceous); the base of its pronotum is not strictly speaking margined, but a narrow marginal space is flattened, and not continuing evenly the hind declivity of the surface may be called a narrow pseudo-margin. The clypeal suture forms a carina abbreviated at each end; the frontal lamina is well-marked and its ends are elevated very variably; the clypeus is acuminate in front, with sinuous sides and reflexed apex; the eyes resemble those of *O. capella*, Kirby (fairly wide, and distinctly faceted); the pronotum is rather closely and not finely (but not deeply) punctulate (the punctures very sparse and faint on the retuse front and also near the base); the middle of the retuse front is topped by a strong widely and sinuously arched transverse carina; the sides of the pronotum are extremely strongly sinuate behind the middle but (viewed from above) non-sinuate in front of the middle; the front angles are roundly (but not widely) obtuse, the hind angles well defined and widely obtuse; the elytra are somewhat strongly crenulate-striate, the crenulations inclining towards being punctures; the elytral interstices are more or less convex (especially towards the sides) and evenly sparsely and not very finely punctulate; the pygidium is coriaceous and somewhat coarsely punctulate; the metasternum is finely sparsely and not deeply punctulate. If (as I believe to be the case) I have both sexes before me, the sexual differences are very feeble, the female having the clypeus less acuminate in front, the ends of the frontal lamina less produced and the retuse front of the pronotum less elevated and more distinctly punctulate.

An example from Cape York is very near to this species but differs in the transverse carina of the pronotum being evenly arched. I believe it to be a good species, but more specimens ought to be examined before it is described; it does not appear to have been described unless it should prove to be a variety of *picipennis*, Hope.

O. Erichsoni, Hope. Specimens that I have no doubt represent this species were sent to me from the Port Essington region by the late Dr. Bovill and there are other examples (from the same place) in the S. Australian Museum. In Masters' Catalogue *O. inermis*, MacL., is sunk as a synonym of this insect, but that seems to be clearly an error. The specimens before me belong to the same group of *Onthophagi* as those referred to above under the name *O. picipennis*, having a narrow flattened space forming a pseudo-margin at the base of the pronotum. It seems desirable to supplement Hope's brief description with the following particulars:—Clypeus rather strongly and narrowly produced and acuminate in the male (evenly rounded or nearly so, in female); puncturation of head none or very faint in male (in female transversely rugose on clypeus, feeble to strong elsewhere); eyes fairly wide, their surface smooth non-granulate (though in some examples underlying facets are visible through the smooth surface); clypeal suture carinate, entire; frontal carina very feeble in male, its ends more developed and—from some points of view—tuberculiform (in female better developed, with a somewhat quadrate projection in the middle); pronotum faintly (or scarcely) punctulate, a strong longitudinal sulcus on hind part, retuse in front, retuse front topped in male by a broad flattened anteriorly emarginate process which projects forward and slightly upward (in the female this is much smaller and almost divided into two, and there is a small tubercle at the external limit of the retuse front), sides strongly sinuate both in front of and behind the middle, front angles subacute, hind angles roundly obtuse; elytra strongly crenulate-striate, the crenulations tending to be punctures, interstices more or less convex and faintly but somewhat closely and not finely punctulate; pygidium with strong sparse punctures mixed with much finer ones; metasternum with strong punctures on the sides and hinder part; front tibiae of male very evidently longer than of female and having a pencil of golden hairs at their inner apex (Long., $4\frac{1}{4}$ — $4\frac{1}{2}$ l.).

O. Howitti, sp. nov. Latus; supra glaber; subtus fulvo-hirtus; sat nitidus; niger, tarsi palpis antennisque plus minusve ferrugineis (harum clava testacea); clypeo fortissime transversim rugato, antice haud vel vix sinuato; sutura clypeali fortiter carinata; carina frontali leviter elevata; capite inter carinas fortiter rugulose punctulato; oculis sat latis vix

manifeste granulatis; prothorace quam longiori ut 16 ad 11 latiori, antice leviter (maris?) vel vix (feminæ?) oblique retuso, antice crebre subrugulose vix fortiter (in cetera parte minus crebre nec rugulose, retrorsum gradatim magis obsoleto) punctulato, antice longitudinaliter subtiliter carinato, postice longitudinaliter leviter canaliculato, foveis sublateralibus profundis, lateribus ante medium vix perspicue (pone medium fortiter) sinuatis, angulis anticis sat acutis (nullo modo dentiformibus) posticis obtusis bene definitis, basi anguste planata; elytris crenulostriatis, crenulis leviter impressis subpunctiformibus, interstitiis sat planis vix perspicue punctulatis; pygidio crebrius subtilius punctulato; metasterno lævi (lateribus et parte antica sat grosse exceptis) punctulato; tibiis anticis sat brevibus.

Maris(?) carina frontali sat fortiter sinuata; elytris magis nitidis.

Feminæ(?) carina frontali fere recta; elytris minus nitidis, subtilissime coriaceis. Long., 5—5½ l.; lat., 3½—3¾ l.

I believe my two specimens of this insect to be male and female, but the differences are not so strongly marked as not to be possibly variations of development in one sex; there is no decided distinction in the front tibiæ. The species superficially resembles the female of the *Onthophagus* mentioned above as *O. desectus*, MacL., but differs from it by its very evidently wider and shorter form, by its much more nitid surface (the specimen that I regard as a male has quite brilliantly nitid elytra and the female is not very much less nitid), by its pronotum much less retuse in front without anything like a tubercle at the top of the retuse part, by the absence of a turned-up edge at the base of the pronotum, by the very much less strong and close puncturation (which moreover is non-rugulose) of the hinder part of the pronotum, &c. In the specimen which I regard as the female of *O. Howitti* the hind one-third of the pronotum is all but non-punctulate.

Northern Territory of S. Australia.

O. Zietzi, sp. nov. Mas. Latus; supra glaber; subtus sparsim fulvohirtus; nitidus; niger, tarsi et antennarum basi picescentibus; clypeo crebre fortiter punctulato, antice emarginato; sutura clypeali fortiter carinata; carina frontali fortiter elevata, supra fortiter arcuatim emarginata; capite inter carinas sat grosse punctulato; oculis angustissimis minus subtiliter granulatis; prothorace quam longiori ut 18 ad 11 latiori, antice breviter retuso, sparsius minus fortiter punctulato, lateribus ante medium haud (pone medium parum perspicue) sinuatis, foveis sublateralibus bene definitis, angulis anticis

leviter obtusis parum productis posticis rotundato-obtusis, basi subtilissime elevato-marginata; elytris crenulato-striatis, crenulis punctiformibus quam striæ sat latioribus, interstis fere planis sparsim subtilius (latera versus magis fortiter magis crebre) punctulatis; pygidio sparsim subtilius punctulato; metasterno fere lævi (parte antica lateribusque sat grosse punctulatis exceptis); tibiis anticis fortiter elongatis; unguiculis sat parvis. Long., 2 l.; lat., $1\frac{2}{3}$ l.

Very close to *O. nitidior*, Blackb., but seems to be certainly a distinct species. It is without the slight coppery tone of that insect. Its pronotum is scarcely margined at the base (in *nitidior* distinctly), the punctiform crenulations of its elytral striæ are considerably smaller, its elytral interstices are nearly flat and (especially those near the suture) are quite finely (in *nitidior* coarsely) punctulate, and its pygidium is very much more finely punctured. A single example (taken by Mr. Zietz) is in the S. Australian Museum.

Central Australia (Lake Callabonna).

O. bicornis, MacL. I have specimens from the Northern Territory evidently appertaining to this species. They are closely allied to those mentioned above as *O. Erichsoni*, Hope, but are much smaller (Long., 3— $3\frac{1}{2}$ l.). The frontal lamina in the female is straight and entire (without projections at ends or middle), in the male represented by two short isolated horns; the median projection topping the retuse front of the pronotum in the male is much like that of *O. Erichsoni*, and there is a conic tubercle on either side at the external limit of the retuse front (in the female the middle projection becomes a scarcely prominent and scarcely emarginate gibbosity and there is no external tubercle); the sides of the prothorax are not sinuate in front of the middle; the front angles of the prothorax are obtuse and the hind angles very well defined (not far from being *right* angles); the eyes are quite distinctly granulate.

O. glabratus, Hope. There are several Australian *Onthophagi* that the few words in which this species is described would fit very fairly well. One of them is a species that was sent to me by the late Dr. Bovill from the Port Essington neighbourhood, and therefore I have little doubt of its being the true *glabratus*. The following indication of characters will enable it to be identified:—Long, $4\frac{1}{2}$ l.— $5\frac{1}{2}$ l.; color uniform, varying from red-brown to black, tarsi palpi and antennæ lighter (especially the antennal club, which is somewhat testaceous); upper surface glabrous coriaceous subopaque; head without any transverse carinæ, its surface to about the level of the eyes transversely wrinkled, hinder part scarcely punctulate; pronotum faintly sparsely and excessively finely punctulate, without inequalities

except the sublateral fovea on either side, its base with a very narrow pseudo-margin (as indicated above under *picipennis*, Hope), the sides not sinuate in front of the middle and not strongly sinuate behind the middle; the eyes nitid and smooth (but with underlying granulation visible in some examples); elytra very finely crenulate-striate, striæ somewhat nitid, crenulations very feeble and not wider than the striæ, interstices flat (or nearly so) scarcely punctulate, pygidium and metasternum scarcely punctulate; front of clypeus just perceptibly sinuous in the middle; no sexual distinctions observed (although numerous specimens examined) except that in some examples the front tibiæ are more slender than in others. The only discrepancy with Hope's description is in the colour of the antennal club. Hope calls the antennæ of the type "piceous" in distinction from the general black colour. In reality the club of the antennæ is dull testaceous, but in several specimens before me (and probably it was the case with the type) the club is dirty and looks darker than it really is.

O. australis, Guér. . I am doubtful as to whether the common *Onthophagus* that usually bears this name in collections is really this almost undescribed insect. The original description is practically unintelligible unless assisted by comparison with the Indian *O. dama*, Fab., but as its author expressly states that its elytra are black and the elytra of the *Onthophagus* I refer to are always more or less green or coppery, there certainly seems to be a doubt about the identification. Harold published a note in 1867 claiming the name for the common *Onthophagus* to which it is usually attributed, but he gives no reason for his determination, which could not possibly be decisive of the matter unless it was founded on comparison with the type. As, however, I have no means of ascertaining whether the type is still in existence, I accept Harold's identification; though it is to be noted that Guérin says of *australis* "thorace mutico" which does not apply (as Harold himself indicates) to the species for which he claims the name.

O. tweedensis, sp. nov. Mas. Sat latus; supra glaber; subtus fulvo-hirtus; minus nitidus; supra subtiliter coriaceus; viridis, elytris nigris vix violaceis, tarsis palpis antennisque ferrugineis (harum clava testacea), clypeo crebre minus fortiter punctulato, antice late reflexo subtruncato; sutura clypeali minus fortiter carinata; lamina frontali sat alta utrinque ut cornu elongatum sat gracile producta (cornubus apicem versus sat fortiter convergentibus; capite pone clypeum sparsius subfortiter punctulato; oculis angustis fortius granulatis; prothorace quam longiori ut 18 add 11 latiori, supra antice retuso, parte retusa lævi in medio anguste

oblique declivi ultra declivitatem mediam (hic subgibboso et hinc fere verticali), cetera parte sparsim subgrosse nec profunde vix rugulose punctulato, foveis lateralibus magnis profundis, lateribus et ante et pone medium fortiter sinuatis, angulis anticis dentiformibus posticis obtusis, basi anguste subplanata; elytris crenulato-striatis, crenulis haud punctiformibus, interstitiis subconvexis sparsim subtiliter punctulatis; pygidio sparsim subfortiter punctulato; metasterno fere lævi (parte antica externa utrinque sat grosse punctulata excepta); tibiis anticis minus elongatis; unguiculis sat parvis. Long., 4 l.; $2\frac{3}{5}$ l.

Allied to *O. australis*, Guér.; and *O. Mastersi*, MacL. Its green coloring is considerably brighter than in the former and in no part is it so decidedly black as the latter, its black coloring even on the elytra having a manifest indigo tone. The very strong sinuation of the sides of its prothorax in the front half distinguish it quite effectually from *australis*; they are slightly sinuate in *Mastersi*, but that species is entirely black on the upper surface and the crenulæ of its elytral striæ are notably punctiform and wider than their striæ. The horns at the ends of the frontal lamina are much less widely separated *inter se* than in any specimen before me of *australis* or *Mastersi* and are almost approximate at their tips. The inequality of the front of the pronotum is also distinctive; viewed from the side the front outline is seen (not to be evenly declivous, but) to run obliquely declivous for a certain distance, then to project forward in a subangular gibbosity and thence to descend almost vertically. In the type specimen there is a deep emargination of the frontal lamina at either end separating the lamina from the horns (as in most examples of *australis* and *Mastersi*) but this is no doubt variable. This species has been given to me by Mr. Lea.

Northern N.S. Wales (Tweed R.).

O. parvus, Blanch. The description given by Blanchard of this species is too brief to be of much use except supplemented by the examination of specimens obtained in the habitat of the type. I have before me a male *Onthophagus* (unfortunately only a single example) from the Far North of W. Australia which agrees very well with Blanchard's description, and as I have observed that the *Onthophagi* of the P. Essington district are largely represented in N.W. Australia). I have seen very few of them from Queensland), there is every probability that the specimen in question is *parvus*. Raffles Bay,—the habitat of *O. parvus* is close to Port Essington. The following notes furnish more exact particulars than Blanchard supplied:—Long., $3\frac{1}{2}$ l. Black, the margins of the clypeus, the antennæ, the palpi and legs red

Upper surface glabrous and very nitid. Head without any transverse carinæ, the clypeal suture just perceptibly elevated; clypeus scarcely sinuate in the middle of the front, its surface somewhat strongly and closely punctulate and evidently transversely wrinkled; the rest of the head punctured not much differently from the clypeus but gradually less closely hindward and with smaller punctures intermingled; the eyes convex, scarcely granulate and not very narrow; pronotum extremely finely and sparsely punctulate, without inequality except the sublateral foveæ, its base with a fairly distinct pseudo-margin, the sides not sinuate in front of the middle (the right side is very slightly so, but I think this is abnormal) and only feebly sinuate behind, front angles moderately produced, hind angles scarcely defined; elytra somewhat strongly crenulate-striate, the crenulations decidedly punctiform and wider than the striæ, interstices decidedly convex and extremely finely punctulate (a little more distinctly towards the lateral margins); pygidium and metasternum strongly punctulate, claws like those of *O. Kingi*, Har. The under-surface is almost glabrous, but this may be due to abrasion. A specimen in the S. Australian Museum examined since the above note was written seems to be the female of this species. It differs from the male chiefly by its strongly cariniform clypeal suture.

O. queenslandicus, sp. nov. Minus latus; supra glaber; subtus sparsissime hirtus; subnitidus, piceus vel niger, antennis palpisque testaceis, tarsis (tibiisque plus minusve) rufescentibus; clypeo sat fortiter subrugulose punctulato et transversim rugato antice rotundato vel vix sinuato, sutura clypeali carinata, carina frontali bene definita antrorsum arcuata; capite inter carinas subgrosse (pone carinam frontalem multo magis subtiliter) punctulato; oculis convexis, minus angustis, vix perspicue granulatis; prothorace quam longiori ut 18 ad 11 latiori, supra æquali (foveis sublateralibus exceptis), subtilius sat crebre (latera versus antice magis crebre) punctulato, lateribus ante medium haud (pone medium leviter) sinuatis, angulis anticis subacutis posticis fere nullis, basi angustissime subplanata; elytris sat leviter (nec angustissime) crenulato-striatis, interstitiis leviter vel vix convexis, subtiliter coriaceis leviter subtilissime sparsim (latera versus paullo magis perspicue) punctulatis; pygidio coriaceo sat crebre minus subtiliter punctulato; metasterno nitido subtiliter punctulato.

Maris quam feminae tibiis anticis longioribus. Long., $3\frac{1}{2}$ l.; lat., $1\frac{9}{10}$ l.

The flattened narrow strip across the base of the pronotum is scarcely noticeable except when looked at obliquely from behind,

but from that point of view is very manifest, especially in the middle. The species is very distinct from any other known to me. From those species which it most resembles superficially its strongly bicarinate head in combination with non-metallic surface separate it widely.

N. Queensland (sent by the late Mr. Cowley).

O. fitzroyensis, sp. nov. Mas. Sat latus; supra glaber; subtus sparsissime fulvo-hirtus; minus nitidus, subtiliter coriaceus; piceus vel niger, leviter vel vix ænescens, tarsis palpis antennisque ferrugineis, harum clava testacea; clypeo sat fortiter punctulato, antice rotundato; sutura clypeali leviter carinata, capite pone clypeum sparsius subtilius punctulato et inter oculos bicornuto; oculis sat angustis, leviter convexis, vix manifeste granulatis; prothorace quam longiori ut 17 ad 11 latiori, supra crebrius subtilissime punctulato, antice a medio oblique concavo-retuso, supra partem retusam in medio vix gibbo, utrinque latus versus foveolato, lateribus ante medium haud (pone medium subfortiter) sinuatis; angulis anticis subacutis posticis rotundato-obtusis; basi angustissime subplanata; elytris crenulato-striatis, crenulis vix punctiformibus quam striæ vix latioribus, interstitiis crebrius subobsolete punctulatis: pygidio sparsim obsolete (metasterno sparsim subtiliter, latera versus sparsim grosse) punctulato; pedibus anticis minus elongatis; tarsorum posticorum articulo apicali subtus breviter acuminato-producto, unguiculis sat magnis, fortiter curvatis.

Femina (?) quam mas magis opaca, clypeo antice leviter sub-sinuato; capite pone clypeum magis crebre punctulato, inermi; pronoto antice vix perspicue retuso, in medio etiam minus gibbo, vix perspicue punctulato; elytris minus fortiter striatis, interstitiis planis. Long., $3\frac{1}{2}$ l.; lat., $2\frac{1}{5}$ l.

The male described above and the insect described doubtfully as its female are in the S. Australian Museum among the relics of the ill-fated Calvert exploring expedition in N.W. Australia. The two were taken at the junction of the Fitzroy and Margaret Rivers, apparently in company. I have no serious doubt of their being one species, but it is to be noted that I know no other Australian *Onthophagus* in which the front of the pronotum is strongly retuse in the male and all but absolutely non-retuse in the female. The species is near *O. Kingi*, Har., which, *inter alia*, is considerably larger, is devoid of coarse puncturation on the metasternum, and has much wider eyes. *O. queenslandicus* is another ally, but *inter alia*, its head is quite strongly bicarinate.

N.W. Australia.

O. aureo-viridanus, sp. nov. Sat latus; totus fulvo-pilosus; nitidus; aureo-viridis, elytris corporeque subtus obscuris, palpis tarsisque ferrugineis, antennis piceis; clypeo crebre ruguloso, antice subemarginato; sutura clypeali subobsoleta sed in medio ut cornu breve conicum erecto; carina frontali angulata, leviter elevata, nonnihil cuprea; capite inter clypeum et carinam frontalem sat grosse punctulato; oculis angustis fere subfortiter granulatis; prothorace quam longiori ut 16 ad 11 latiori supra sparsius (ad latera magis crebre) subgrosse punctulato, æquali (foveis lateralibus exceptis), lateribus ante medium haud (pone medium leviter) sinuatis, angulis anticis obtusis posticis fere nullis, basi subtiliter elevato-marginata; elytris fortiter striatis, striis latis confuse punctulatis, interstitiis convexis lævibus (sed prope marginem lateralem fortiter) punctulatis; pygidio metasternoque fortiter crebrius punctulatis; unguiculis parvis. Long., $2\frac{1}{2}$ l.; lat., $1\frac{2}{3}$ l.

I have seen four specimens of this insect and do not observe any sexual distinctions among them except that one of them (no doubt a male) has front tibæ more slender than the others. The species is not near any other Australian *Onthophagus* known to me except *geelongensis*, Blackb., from which it differs *inter alia* by its colour, by its clypeal suture obsolete except in the middle where it becomes a short conical horn; and by its pronotum very evidently more coarsely and less closely punctulate, and edged along its base by a fine raised line which is quite well defined in the middle.

South Australia.

O. Macleayi, sp. nov. Minus latus; supra pilis erectis flavescens sparsim vestitus; subtus fulvo-hirtus; subnitidus, elytris pygidioque subtiliter coriaceis; rufo-brunneus, antennarum clava dilutiori; capite æquali, rugulose sat grosse nec crebre punctulato, antice sat fortiter sat anguste reflexo et sat profunde emarginato; oculis minus angustis haud perspicue granulatis; prothorace fere æquali (antice vix retuso et vix bigibbo postice late longitudinaliter vix sulcato) foveis sublateralibus exceptis, sparsius subfortiter (prope angulos anticos sat grosse) punctulato, angulis anticis obtusorotundatis posticis sat definitis obtusis, lateribus ante medium haud (pone medium leviter) sinuatis, basi subfortiter elevato-marginata leviter trisinuata; elytris sat fortiter striatis, striis leviter punctulatis, puncturis in striis quam striæ latioribus, interstitiis convexis nonnihil cariniformibus sparsim leviter fere grosse punctulatis, puncturis in interstitiis piliferis; pygidio metasternoque sat grosse punctulatis

(puncturis in ambobus piliferis); tibiis anticis minus elongatis, unguiculis parvis. Long., 4 l.; lat., $2\frac{1}{2}$ l.

The type of this species (which was generously given to me by Mr. Lea) is probably a male, judged by the narrowed and quite strongly upturned front of its head. The clypeus is evenly continuous with the rest of the head without any trace of a clypeal suture or carina or any change in the puncturation. Probably this species bears a general resemblance to the practically undescribed *O. Thoreyi*, Har., but as the presence of a frontal carina in both sexes is one of the few characters attributed to that species I presume that it is distinct. This insect is also somewhat like superficially to an *Onthophagus* from N. Australia which I have no doubt is *O. latro*, Har., which, however, among many other distinctions has the base of its pronotum unmarginated and its eyes quite distinctly granulate. I have named it after the late Sir W. Macleay.

N.S. Wales; Sydney.

O. Helmsi, sp. nov. Mas (?). Sat latus; supra glaber; subtus sparsissime fulvo-hirtus; sat nitidus; niger, tarsis palpis antennisque ferrugineis; clypeo transversim rugato, antice leviter emarginato; sutura clypeali fortiter carinata; capite pone clypeum sat grosse punctulato et inter oculos obtuse bituberculato; oculis minus angustis vix perspicue granulatis; prothorace quam longiori ut 18 ad 11 latiori, supra antice vix perspicue retuso (foveis sublateralibus modicis), crebre minus fortiter punctulato (parte sublaterali media lævi), postice longitudinaliter vix sulcato, lateribus ante medium haud (pone medium leviter) sinuatis, angulis anticis fere rectis posticis obtusis, basi subtilissime (nisi in medio vix perspicue) elevato-marginata, elytris punctulato-striatis, puncturis quam striæ sat latioribus, interstitiis convexis crebrius minus subtiliter punctulatis; pygidio crebre sat grosse punctulato; metasterno (media parte lævi excepta) sat grosse punctulato; tibiis anticis modicis; unguiculis minus brevibus. Long. $2\frac{1}{2}$ l.; lat., $1\frac{2}{3}$ l.

I am doubtful of the sex of the unique example of this species (presented to me by Mr. Lea). The two frontal tubercles and the tendency (very slight) to a retuse form on the front of the pronotum are in favour of its being a male, but the front tibiæ do not show any elongation likely to be sexual. It is superficially not unlike *O. nitidior*, Blackb., but *inter alia* has much wider eyes, which are scarcely perceptibly granulate. It also resembles *O. Koebelei*, Blackb. (which has similar eyes) but differs by *inter alia* its convex conspicuously punctulate elytral interstices and

its very much more closely punctulate pygidium which (unless the type is abraded) is non-setose.

N.W. Australia (Kimberley; Mr. Helms).

O. Koebelei, sp. nov. Sat latus; supra glaber subtus fulvo-hirtus; nitidus; niger, clypei margine pedibusque piceis, antennis testaceis, pygidio rufo; clypeo perbrevis, fortiter crebre punctulato, vix transversim rugato, antice vix sinuato, sutura clypeali sat fortiter carinata antrorsum sat fortiter arcuata, carina frontali sat fortiter elevata; capite inter carinas sat fortiter minus crebre (pone carinam frontalem minus fortiter subsparsim) punctulato; oculis sat convexis minus angustis, vix perspicue granulatis; prothorace quam longiori ut 9 ad 5 latiori, supra æquali (foveis sublateralibus subobsoletis exceptis) subtiliter sparsim (latera versus magis fortiter vix magis crebre) punctulato, lateribus (his minus fortiter arcuatis) ante medium haud (pone medium vix) sinuatis, angulis anticis obtusis minus productis posticis late obtusis, basi media subtiliter elevato-marginata; elytris punctulato-striatis, striis sat subtilibus, puncturis quam striæ sat latioribus, interstitiis subplanis subtilissime (prope marginem lateralem fortiter) punctulatis; pygidio sparsim setoso, fortiter sparsius punctulato; metasterno (medio late lævi excepto) grosse punctulato. Long., 2 l.; lat., $1\frac{1}{4}$ l.

I am doubtful of the sex of my unique specimen; the front tibiæ are moderately short and stout, but it is probably a species in which the sexes do not differ much *inter se*. There is a little tendency to rufescence about the base and apex of the elytria which is probably not constant. The basal margin of the pronotum is an extremely fine line scarcely distinct except in the middle, but the pronotum certainly cannot be called unmarginated at the base. The very feebly rounded sides of the pronotum furnish a good character.

N. Queensland (Mr. Koebele).

O. pontilis, sp. nov. (Mas.?) Sat latus; supra glaber; subtus sparsim fulvo-hirtus; nitidus; obscure æneus, pronoto non-nihil aurato, antennis pedibusque ferrugineis, elytris (exempli typici) prope apicem testaceo-variegatis; clypeo perbrevis, fortiter crebre punctulato, transversim rugato, antice sat fortiter emarginato, sutura clypeali sat fortiter carinata antrorsum sat fortiter arcuata, carina frontali nulla sed fronte media tuberculo magno acute conico armata; capite pone carinam clypealem fortiter sat crebre (postice minus crebre) punctulato; oculis angustis vix convexis minus subtiliter granulatis; prothorace quam longiori ut 7 ad 4 latiori, supra fere æquali (foveis sublateralibus et sulco obso-

leto longitudinali brevi postico exceptis), antice vix perspicue retuso, subfortiter (antrorsum a basi gradatim magis subtiliter, latera versus magis grosse) punctulato, lateribus ante medium haud (pone medium vix) sinuatis, angulis anticis obtusis minus productis posticis fere nullis, basi anguste sat fortiter elevato-marginata; elytris minus anguste crenulato-striatis, stria subsuturali profunde (ceteris leviter) impressis, interstitiis subtilissime coriaceis subplanis subfortiter (latera versus subgrosse rugulose) sat crebre punctulatis; pygidio coriaceo leviter punctulato; metasterno medio subtilius (latera versus sat grosse) punctulato; tibiis anticis minus elongatis, sat latis. Long., $2\frac{1}{4}$ l.; lat. $1\frac{2}{5}$ l.

Closely allied to *O. blackwoodensis*, Blackb., but differing from it *inter alia* by its conspicuously brassy tone of colour (almost golden on the pronotum), the clypeal carina very strongly arched (its convexity forward, and causing the clypeus to be extremely short), the pronotum considerably less strongly punctulate and with its sides all but non-sinuate behind the middle, and the elytral interstices nearly flat. The forehead with a median conical tubercle (or short horn) in the male in combination with the pronotum margined on its base by a rather strong raised edging and small size will separate this species from the other described Australian *Onthophagi*.

S. Australia; Murray Bridge.

O. Tamworthi, sp. nov. Sat latus; supra glaber; subtus sparsim fulvo-hirtus; minus nitidus, coriaceus; obscure viridis, tarsis antennisque ferrugineis (harum clava nigricanti); clypeo crebre sat grosse ruguloso-punctulato, antice leviter emarginato; sutura clypeali fortiter carinata fere recta; carina frontali sat fortiter elevata antrorsum leviter arcuata; capite inter carinas crebre sat grosse subrugulose punctulato; oculis angustis sat planis minus subtiliter granulatis; prothorace quam longiori ut 18 ad 11 latiori, supra crebre fortiter punctulato, postice longitudinaliter manifeste canaliculato, antice breviter retuso, supra partem retusam obtuse transversim carinato, utrinque prope latera foveolato, lateribus ante medium haud (pone medium manifeste) sinuatis, angulis anticis sat obtusis minus productis posticis sat rotundatis, basi vix perspicue (in medio sat manifeste) elevato-marginata; elytris subtiliter nitide crenulato-striatis, interstitiis convexis, his cum striis irregulariter minus crebre fere subgrosse sparsim (latera versus magis crebre) punctulatis; pygidio metasternoque sat grosse punctulatis.

Majoris quam feminae tibiis anticis manifeste magis elongatis. Long., $3\frac{1}{4}$ l.; lat., 2 l.

A very distinct species, recalling to mind by its general appearance the species referred to above under *O. australis*, Guér., but with the base of its pronotum very differently margined, the frontal carina of its male not elevated at the ends, the club of its antennæ dark, its size much less, &c., &c.

N.S. Wales (Tamworth); Mr. Lea.

O. Frenchi, sp. nov. Sat latus; supra glaber; subtus sparsim fulvo-hirtus; minus nitidus, subtiliter coriaceus; æneus, nonnihil cuprascens, tarsis palpis antennisque ferrugineis (harum clava nigricanti); clypeo ut *O. Tamworthi*, Blackb., sutura clypeali (maris leviter, feminae sat fortiter) carinata, carina frontali sat elevata (maris retrorsum arcuata, feminae recta); capite inter carinas ut clypeus sculpturato; oculis ut *O. Tamworthi*; prothorace quam longiori ut 18 ad 11 latiori, supra crebre sat fortiter punctulato, supra æquali (foveis sublateralibus et canali longitudinali postice minus perspicuo exceptis), lateribus ante medium haud (pone medium vix manifeste) sinuatis, angulis anticis vix obtusis leviter subproductis posticis fere nullis, basi vix perspicue (in medio sat manifeste) elevato-marginata; elytris subtiliter nitide crenulato-striatis, interstitiis convexis subtilius sat crebre (latera versus magis fortiter) punctulatis; pygidio metasternoque fortiter nec crebre punctulatis.

Maris quam feminae tibiis anticis manifeste magis elongatis.

Long., 3 l.; lat., $1\frac{9}{10}$ l.

Not unlike the preceding but readily distinguished from it by, *inter alia*, its pronotum not transversely carinate.

N.S. Wales (Queanbeyan); Mr. Lea.

O. henleyensis, Black. The differences between this species and that which I have no doubt is *jubatus*, Har., are very considerable but do not lend themselves readily to tabulation on account of the great difference between the sexes of the latter. In *henleyensis* the pronotum is in both sexes very evidently coarser than in female *jubatus*, very much coarser than in male *jubatus*; both sexes are nitid,—the male of *jubatus* opaque; the pronotum is pilose in front only in the male—in *jubatus* in both sexes. The frontal horns in numerous examples of male *henleyensis* are in their greatest development short stout conical and divergent,—in the single male of *jubatus* examined they are long slender and arched. On the whole the males of the two species are not much like each other, while the females bear considerable resemblance *inter se*.

O. victoriensis, sp. nov. Sat latus; supra glaber; subtus fulvo-hirtus; subnitidus, elytris subtilissime coriaceis; niger; clypeo grosse crebre subrugulose punctulato, antice sat

fortiter emarginato utrinque subdentiformi; sutura clypeali fortiter (præcipue in medio) carinata, utrinque abbreviata; carina frontali sat fortiter elevata fere recta; capite inter carinas grosse minus crebre punctulato; oculis sat angustis, leviter convexis, perspicue granulatis; prothorace quam longiori ut 8 ad 5 latiori, sat crebre sat grosse (antice minus grosse) punctulato, postice longitudinaliter manifeste canaliculato, utrinque foveolato, antice vix retuso, lateribus ante medium haud (pone medium modice) sinuatis, angulis anticis subacutis parum productis posticis fere nullis, basi sat fortiter elevato-marginata; elytris sat fortiter crenulato-striatis, crenulis latera versus subpunctiformibus, interstitiis convexis sparsim minus subtiliter punctulatis; pygidio (hoc coriaceo) metasternoque fortiter punctulatis. Long., $2\frac{1}{2}$ l.; lat., $1\frac{7}{10}$ l.

I am doubtful of the sex of my unique example of this species, which belongs to a group in which there is usually very little external difference between the sexes,—but the front tibiæ being decidedly broad I suspect it is a female. It is near *O. henleyensis*, Blackb.; but that species has elytra non-coriaceous and very much more rugulose, and considerably narrower eyes.

Victoria; I am uncertain of the exact habitat.

O. submuticus, sp. nov. Sat latus; supra glaber; subtus sparsim fulvo-hirtus; pernitidus; niger, tarsis palpis antennisque (harum clava testacea) ferrugineis; clypeo transversim ruguloso, antice vix sinuato; sutura clypeali integra, leviter carinata; carina frontali nulla; capite pone clypeum sparsim subtiliter punctulato; oculis minus angustis, leviter convexis, nitidis, vix perspicue granulatis; prothorace quam longiori ut 18 ad 11 latiori, sparsim subtilissime nec obsolete punctulato, postice longitudinaliter haud canaliculato, æquali (foveolis sublateralibus exceptis), lateribus (his fortiter rotundatis) ante medium haud (pone medium minus fortiter) sinuatis, angulis anticis subacutis posticis late obtusis, basi nullo modo marginata; elytris punctulato-striatis, puncturis quam striæ multo latioribus parum profundis, interstitiis sat planis, subtilius sat crebre punctulatis; pygidio crebre subtilius (metasterno sparsim fortiter) punctulato. Long., $3\frac{1}{2}$ l.; lat., $2\frac{1}{2}$ l.

Allied to *O. muticus*, Macl., and *inermis*, Macl. This species differs from the insect which I believe to be the former *inter alia* by its sparsely and strongly punctulate metasternum; from that which I take to be *inermis* by, *inter alia*, its still more polished surface and its elytral interstices very conspicuously punctulate. The sides of the prothorax are much more strongly rounded than in any specimen that I have seen of either of the species just

mentioned. I am doubtful as to the sex of my unique example of *submuticus*, but as the external teeth of the front tibiæ are fairly strong and the clypeal suture is distinctly carinate I deem it probably a female.

N. Queensland.

O. muticus, Macl. This species together with *inermis*, Macl., and *submuticus*, Blackb., form a small group closely allied *inter se* and without any other close allies so far as I know. Their surface is black, decidedly (or very) nitid, the pronotum without any trace of basal margin and not (or excessively finely) punctulate, the head without frontal carina (but slightly prominent close to the inner margin of the eyes) and with the clypeal suture non-carinate (male) or slightly carinate (female), the front tibiæ about the same length in the sexes but more strongly toothed externally in the female than in the male, the clypeus not (or scarcely) sinuate in front. I am not sure that I know both sexes of any member of the group except *muticus*, but I do not feel any doubt of the sexes unknown to me confirming the above information. I think I know only the male of *inermis* and the female of *submuticus*, and it is perhaps just possible that *submuticus* may be the female of *inermis*, but I think it most unlikely, owing to the very much more strongly rounded sides of the prothorax in the former. In *muticus* the female pronotum and elytra are just perceptibly punctulate (those of the male not perceptibly) but there is no such difference as there would be in this respect between the male and female of *inermis* if my *submuticus* were the female of that species. The metasternum of the species that I identify with *muticus* is closely and finely punctulate.

O. inermis, Macl. The only specimen I have seen that I can refer to this species is in the collection of Mr. Lea. It is evidently a male. It agrees with Macleay's very brief description; and also with his note of difference from *muticus*, Macl., in being "smaller, more brilliant, smoother on the thorax and more deeply striated on the elytra." It also differs from the insect mentioned above as *muticus* in having the puncturation of its metasternum sparse and strong,—a character not mentioned by its author.

O. Comperei, sp. nov. Sat latus; supra glaber; subtus sparsim fulvo-hirtus; minus nitidus, subtiliter coriaceus; niger, tarsi palpis antennisque (harum clava testacea) ferrugineis; clypeo antice emarginato, sutura clypeali sat fortiter carinata; carina frontali fere nulla, capite inter oculos utrinque tuberculo sat magno armato, inter carinas subgrosse nec profunde punctato; oculis minus angustis, sat convexis, perspicue sat obsolete granulatis; prothorace quam

longiori ut 18 ad 11 latiori, crebre minus subtiliter punctulato, postice longitudinaliter vix manifeste canaliculato, lateribus ante medium haud (pone medium leviter) sinuatis, angulis anticis subacutis posticis fere nullis, basi nullo modo marginata; elytris sat fortiter crenulato-striatis (crenulis certo adspectu punctiformibus quam striæ latioribus), interstitiis convexis sparsius subtiliter perspicue punctulatis; pygidio sparsim obsolete (metasterno sat grosse puncturis nonnullis minoribus intermixtis) punctulato.

Maris clypeo antice fortiter emarginato utrinque subdentiformi, tuberculis frontalibus conicis, tibiis anticis nonnihil elongatis, pronoto antice plus minusve retuso.

Feminæ clypeo antice leviter emarginato haud dentiformi, tuberculis frontalibus obtusis, tibiis anticis sat brevibus, elytris magis opacis, pronoto (foveolis lateralibus exceptis) æquali. Long., 3 l.; lat., $1\frac{1}{2}$ l.

I have named this species after Mr. G. Compere, of W. Australia, who is rendering very valuable service in his investigations of insect parasites.

N.B.—Since writing the above description I have seen male examples in the collection of Mr. Griffith (which I hesitate to separate from this species) evidently more nitid than the type and having the frontal tubercles prolonged into considerable horns and the front of the pronotum quite strongly retuse.

N. Queensland.

O. sydneyensis, sp. nov. Sat latus; supra glaber; subtus sparsim fulvo-hirtus; nitidus; niger, palpis tarsis et antennarum basi ferrugineis; oculis angustis subfortiter granulatis; clypeo antice sinuato; prothorace quam longiori ut 18 ad 11 latiori, supra subtilius sat crebre punctulato, antice retuso, utrinque foveolato, lateribus ante medium haud (pone medium vix) sinuatis, angulis anticis sat obtusis posticis fere nullis, basi nullo modo marginata; elytris punctulato-striatis, puncturis quam striæ sat latioribus, interstitiis sat planis crebrius subtilius punctulatis; pygidio crebrius subtilius (metasterno sparsim subtiliter,—pone coxas intermedias sparsissime subfortiter) punctulatis.

Maris capite fere lævi inter oculos bicorni; pronoto antice fortiter retusa, obsolete punctulato; tibiis anticis paullo elongatis.

Feminæ clypeo sat fortiter ruguloso, sutura clypeali carinata, capite pone clypeum sparsim punctulato et bituberculato, pronoto antice brevissime retuso, tibiis anticis sat brevibus. Long., $2\frac{1}{2}$ l.; lat. $1\frac{3}{4}$ l.

Near *mutatus*, Har., but *inter alia* without the least trace of a basal margin to the pronotum; the head of the male without any clypeal carina or distinct puncturation, &c.

N.S. Wales; Sydney (Mr. Lea).

O. Dumbrelli, sp. nov. Mas (?). Sat latus; supra (pygidio setoso excepto) glaber; subtus fulvo-hirtus; sat nitidus; niger, tarsis palpis antennisque (harum clava dilutiori) ferrugineis; clypeo transversim ruguloso-punctulato, antice vix sinuato; sutura clypeali sat fortiter carinata utrinque abbreviata; carina frontali sat elevata; capite inter carinas subtilius nec crebre punctulato; oculis angustis sat aspere granulatis; prothorace quam longiori ut 18 ad 11 latiori, supra antice crebrius fortius (basin lateraque versus magis sparsim magis subtiliter) punctulato, postice longitudinaliter sulcato, antice perspicue retuso (parte retusa media antrorsum perspicue sat late gibbosa), foveis sublateralibus sat profundis, lateribus ante medium vix (pone medium fortius) sinuatis angulis anticis sat acutis posticis obtusis, basi haud marginata; elytris punctulato-striatis, puncturis in striis quam striæ sat latioribus, interstitiis subconvexis subtilissime coriaceis subtiliter minus, crebre (latera versus minus subtiliter) punctulatis; pygidio coriaceo sparsim leviter (metasterno sparsim subtilius, antice subgrosse) punctulato; tibiis anticis leviter elongatis; unguiculis sat parvis. Long., $2\frac{3}{4}$ l.; lat., $1\frac{1}{2}$ l.

A small inconspicuous species resembling *O. Fletcheri*, Blackb., and *O. sydneyensis*, Blackb., and differing *inter alia* from the former by its clypeus not emarginate in front and the testaceous club of its antennæ, from the latter by its pronotum longitudinally sulcate (except near the front) and differently punctulate. Also resembles some species of Group V. (e.g. *O. Helmsi*, Blackb., which has the metasternum very differently sculptured, &c.). Taken at Galston by Messrs. Lea and Dumbrell; given to me by the former.

N.S. Wales.

O. negatorius, sp. nov. Fem. (?). Sat latus; supra glaber; subtus fulvo-hirtus; sat nitidus; niger leviter ænescens, tarsis palpis antennarumque basi subferrugineis; clypeo transversim ruguloso, antice emarginato; sutura clypeali sat fortiter carinata; carina frontali sat obsoleta arcuata et sinuata vix continua; capite toto pone clypeum sat æqualiter sat grosse punctulato; prothorace quam longiori fere ut 18 ad 11 latiori, supra sat æquali, sat crebre minus subtiliter punctulato, versus latera vix foveolato sed tuberculo obtuso lævi instructo, lateribus ante medium haud (pone medium sat

fortiter) sinuatis, angulis anticis fere rectis posticis obtusis, basi haud marginata; elytris crenulato-striatis, totis crebre inæqualiter minus subtiliter punctulatis, interstitiis subconvexis inæqualiter (subtiliter et subtilissime) coriaceis (sicut partes nonnullæ magis nitidæ videntur); pygidio fortiter sat crebre (metasterno sparsim subtilius) punctulato; tibiis anticis sat brevibus; unguiculis parvis. Long., $1\frac{1}{2}$ l.; lat., $1\frac{1}{10}$ l.

This very small *Onthophagus* was given to me by Mr. Lea. From its immediate allies it differs as follows, *inter alia*:—From *Dumbrelli*, Blackb., by the dark club of its antennæ; from *sydneyensis*, Blackb., and *Fletcheri*, Blackb., by the close strong puncturation of its elytral interstices. It also resembles some species of Group V. If its pronotum were margined at the base it would fall in the tabulation beside *O. henleyensis*, Blackb., and *jubatus*, Har., differing from both (female) by the very much finer puncturation of its pronotum. It has much superficial resemblance to the female of *O. nitidior*, Blackb., from which (disregarding the unmarginated base of its pronotum) it differs by the strongly sinuous and scarcely distinct carina of its pronotum as well as by the much more close and confused puncturation of its elytral interstices, &c. The irregular puncturation and the uneven coriaceousness of its elytra give the interstices a somewhat rugulose appearance,—the more nitid part seeming to be unevenly prominent.

W. Australia (Donnybrook).

O. Fletcheri, sp. nov. Sat latus; supra pilis subtilibus erectis vestitus; subtus fulvo-hirtus; nitidus (maris elytris minus nitidis, subtiliter coriaceis); niger, tarsis palpis et antennarum basi ferrugineis; clypeo antice emarginato, rugulose punctulato; sutura clypeali sat fortiter carinata; carina frontali sat elevata, antrorsum arcuata; capite inter carinas fortiter punctulato; oculis angustis, minus convexis, perspicue granulatis; prothorace quam longiori ut 16 ad 11 latiori, crebre fortiter punctulato, æquali (foveolis sublateralibus exceptis), lateribus ante medium haud (pone medium sat perspicue) sinuatis, angulis anticis subobtusis parum productis posticis late obtusis, basi nullo modo marginata; elytris sat fortiter punctulato-striatis, puncturis quam striæ sat latioribus, interstitiis fere planis sparsim subtilius (prope latera grosse) punctulatis; pygidio fortiter crebrius (metasterno sparsius grosse) punctulato.

Maris clypeo antice leviter emarginato; carina frontali antrorsum arcuata, elytris pygidioque subtiliter coriaceis, tibiis anticis sat elongatis sat angustis.

Feminæ clypeo antice fortiter emarginato, carina frontali sat recta, elytris pygidioque haud coriaceis, tibiis anticis sat brevibus sat latis. Long., $2\frac{1}{4}$ —3 l.; lat., $1\frac{3}{10}$ — $1\frac{4}{5}$ l.

The erect pilosity is long on the head and along the front margin of the pronotum, scarcely marked on the general surface of the pronotum, somewhat short (but very well marked) on the elytra and pygidium; the prothorax is rather elongate as compared with that of most *Onthophagi*.

N.S. Wales; Inverell (Mr. Fletcher).

O. subocelliger, sp. nov. Modice latus; supra glaber; subtus fulvo-hirtus; minus nitidus, elytris subtiliter coriaceis; obscure cuprascens, tarsis palpis antennisque ferrugineis (harum clava obscura); clypeo antice sat fortiter emarginato; oculis perangustis perspicue asperatim granulatis; prothorace quam longiori ut 17 ad 11 latiori, supra confertim subfortiter subocellatim punctulato, æquali (foveolis sublateribus sat obsoletis exceptis), lateribus ante medium haud (pone medium leviter) sinuatis, angulis anticis sat obtusis posticis minus distinctis, basi nullo modo marginata; elytris sat subtiliter crenulato-striatis, crenulis quam striæ haud latioribus, interstitiis sat fortiter convexis obsolete subrugulose haud seriatim (prope latera paullo magis fortiter) punctulatis; pygidio metasternoque sat grosse punctulatis, hoc in media parte fere lævi, unguiculis parvis.

Maris capite fere lævi vel subtilissime sparsim punctulato; carina frontali sat elevata utrinque perspicue sursum producta; tibiis anticis modice elongatis.

Feminæ capite sat crebre subfortiter punctulato; sutura clypeali sat fortiter carinata; carina frontali minus elevata; tibiis anticis sat brevibus. Long., 2 l.; lat., $1\frac{1}{2}$ l.

This species is probably near *O. ocelliger*, Har., but differs from the description of that species, *inter alia*, by its upper surface devoid of setæ (I have examined numerous specimens) and the interstices of its elytra uniformly convex. The sexual characters of the head are very variable, the frontal carina of the male being in some examples very feeble and scarcely elevated at its ends and one male having the clypeal suture evidently carinate.

Northern Territory of S. Australia.

O. margaretensis, sp. nov. Modice latus; elytris pygidioque setis subtilibus erectis flavis sparsim vestitis; subtus flavo-hirtus; nitidus; rufo-brunneus, capite postice pronotoque læte viridibus, metasterno æneo, antennarum clava testacea; clypeo transversim rugato, antice sat fortiter emarginato; sutura clypeali sat fortiter carinata; carina frontali modice elevata, recta; capite inter carinas crebrius sat fortiter

punctulato; oculis angustis perspicue granulatis; prothorace quam longiori ut 18 ad 11 latiori, supra antice oblique retuso, supra partem retusam obsolete trigibbo, hac grosse punctulato, cetera parte crebrius subtiliter punctulata, lateribus ante medium haud (pone medium sat fortiter) sinuatis, angulis anticis sat obtusis posticis late obtusis, foveis lateralibus sat profundis, basi haud marginata; elytris fortius striatis striis leviter punctulatis (puncturis quam striæ latioribus), interstitiis convexis sparsim inæqualiter (hic et illic sat grosse) punctulatis; pygidio et metasterni lateribus grosse punctulatis; tibiis anticis sat brevibus; unguiculis posterioribus modicis. Long., 3 l.; lat., $1\frac{4}{5}$ l.

I am not certain as to the sex of the unique example of this insect. The extremely deep coarse puncturation of the retuse part of the pronotum in strong contrast to the fine puncturation of the rest of the surface is a very unusual character. The type is in the S. Australian Museum among the relics of the Calvert Expedition and was taken on the Margaret River.

N.W. Australia.

Tabulation of the characters (as indicated in their descriptions) of the Australian ONTHOPHAGI not examined by the author of this memoir, followed by notes on those species:—

- A. Dorsal surface pilose or setose
- B. Elytra unicolorous.
 - C. Size very large (9 l.) rupicapra, *Waterh.*
 - CC. Size much smaller.
 - D. Front of clypeus emarginate.
 - E. Front of pronotum retuse, the retuse front topped by a transverse carina perpilosus, *MacL.*
 - EE. Front of pronotum retuse, the retuse front topped by a flattened protuberance villosus, *MacL.*
 - EEE. Front of pronotum even ... { incanus, *MacL.*, and ocelliger, *Har.*
 - DD. Front of clypeus not emarginate.
 - E. Male with a frontal lamina and two horns on the head Thoreyi, *Har.*
 - EE. Male with the frontal elevation a mere carina vilis, *Har.*
 - BB. Elytra bicolorous rubicundulus, *MacL.*
- AA. Dorsal surface glabrous.
- B. Dorsal surface without red or testaceous markings.
- C. Pronotum not punctulate.
- D. Dorsal surface entirely black (male with two contiguous frontal horns) furcaticeps, *MacL.*
- DD. Head and pronotum metallic greenish (pronotum retuse and tuberculate in front) Froggatti, *MacL.*, and lobicollis, *MacL.*
- CC. Pronotum punctulate.
- D. Front of pronotum retuse.
- E. Dorsal surface non-metallic.

- F. Pronotum very finely punctulate ... } *acuticeps*, *Macl.*, and
 FF. Pronotum coarsely punctulate. } *propinquus*, *Macl.*
 G. Size large (Long, 6 l.); front of
 clypeus emarginate ... *fissiceps*, *Macl.*
 GG. Size much smaller (Long,
 3½ l.); front of clypeus not
 emarginate ... *salebrosus*, *Macl.*
 EE Dorsal surface more or less metallic.
 F. Retuse front of pronotum quadri-
 tuberculate (male with a single
 frontal horn) ... *Crotchi*, *Har.*
 FF. Retuse front of pronotum not
 quadrituberculate.
 G. Size comparatively large (Long.,
 4½ l.) ... *lucidicollis*, *Bohem.*
 GG. Size much smaller (Long., 2¾ l.)
 DD. Front of pronotum not retuse. *purpureicollis*, *Macl.*
 E. Dorsal surface non-metallic ... *parallelicornis*, *Macl.*
 EE. Dorsal surface more or less metallic.
 F. Elytral interstices opaque ... *evanidus*, *Har.*
 FF. Elytral interstices notably more
 nitid.
 G. Alternate interstices of elytra
 convex ... *planicollis*, *Har.*
 GG. Interstices of elytra equal *inter*
se.
 H. Pronotum coarsely punctulate *granum*, *Lansb.*
 HH. Pronotum finely punctulate *viridiobscurus*, *Blanch.*
 BB. Dorsal surface with red or testaceous
 markings.
 C. Pronotum bicolorous ... *rubescens*, *Macl.*
 CC. Pronotum unicolorous.
 D. A conspicuous black fascia on the red
 elytra ... *minusculus*, *Macl.*
 DD. Shoulders, sides, and an apical spot
 on elytra red ... *Fabricii*, *Waterh.*
 DDD. Elytra with only the shoulders red *humeralis*, *Macl.*
 DDDD. Obscure reddish spots about
 shoulders and apex only.
 E. Male with a frontal lamina and horns *emarginatus*, *Macl.*
 EE. No strongly raised frontal promi-
 nence in either sex ... *incornutus*, *Macl.*
 N.B.—I am unable to place *O. tabellicornis*, *Macl.*, and *O. integriceps*,
Macl., even in *this* tabulation.

O. rupicapra, *Waterh.* A very large species from W. Aus-
 tralia; the elytra clothed with setæ, the male with two discon-
 nected frontal horns. I have seen nothing like it.

O. perpilosus, *Macl.* A small black species from Queensland,
 densely pilose on the upper surface; interstices of elytra costi-
 form, the under surface also villose. I have not seen any species
 resembling it.

O. incanus, *Macl.* A small species from far North of W.
 Australia; bronzy black, coarsely punctulate and densely clothed
 with erect grey pubescence. Very distinct from all the species
 before me.

O. vilis, Har., a small species from Somerset (Cape York); the elytra clothed with yellowish pubescence, the head and prothorax coppery, elytra black, nitid. Certainly unknown to me.

O. villosus, Macl. A small species from the far North of W. Australia, clothed above with ashy villosity, the colour black, the pronotum retuse and with a median projection in front. I have seen nothing like it.

O. ocelliger, Har. A small species from Somerset (Cape York); referred to under the heading *O. subocelliger*.

O. rubicundulus, Macl. A very small species from Queensland; unknown to me; seems to be near *O. asper* but *inter alia* differing by its flat elytral interstices.

O. Thoreyi, Har. Quite insufficiently described; probably near *O. Macleayi*, Blackb., but with sexual characters extremely different, whichever sex the type of *O. Macleayi* may be.

O. tabellicornis, Macl. A fairly large species from N. Queensland (Long., $5\frac{1}{2}$ l.). Probably a member of my Group II. but as the description gives no information concerning the puncturation of the pronotum nothing confident can be said about it. If it belongs to that group it is probably distinct from any other known species, as the front of its clypeus happens to be described and is different from that of any other species (of the group) whose author has described that part.

O. lobicollis, Macl. A species of moderate size (Long., 4 l.) from Cape York. The description of the sculpture of the pronotum is to me unintelligible. However, I know no species that combines the following characters of *O. lobicollis*,—very nitid, black, head and thorax greenish, thorax smooth (i.e., I suppose, unpunctured) with a large and prominent tubercle in front, head of male with a lamina which (as I read the description) is both elevated and emarginate in the middle.

O. Froggatti, Macl. I cannot find any definite character in the description of this species to distinguish it from *O. lobicollis*, Macl., unless it be that the front of the pronotum is bituberculate, but the description of the pronotum of the latter is so indefinite that I am not sure Sir W. Macleay does not mean to say that the front of its median tubercle is emarginate,—in which case the difference would be slight.

O. furcaticeps, Mast. (*furcatus*, Macl.). From N. Queensland (Long., $3\frac{1}{2}$ l.). A black, nitid, species, with the pronotum unpunctured, and retuse in front with two small tubercles,—the head of the male with two contiguous horns. I have not seen any insect that can be either sex of this species.

O. acuticeps, Macl. A small species from the far North of W. Australia; black; very nitid; front of clypeus in male pointed, female rounded; two short frontal horns (apparently in both

sexes) pronotum retuse in front, with four tuberosities which are in female "not noticeable" (i.e., I suppose, very feeble); interstices of elytra convex (no information as to their puncturation). No species before me seems to fit this description.

O. fissiceps, Macl. This species from the far North of W. Australia must be extraordinarily like the insect that I regard as *O. Erichsoni*, Hope (from Port Essington) in many respects, but as its author states that the front of its clypeus is emarginate (as well as pointed and reflexed) in the male, and that some part of the pronotum is rugulose, it is no doubt distinct. I have not seen it.

O. integriceps, Macl. The description of this species is a mere enumeration of differences from *O. fissiceps*, so that it is difficult to gain a clear notion of its characters, but the best idea I can form of it seems to point to its being identical with the species referred to above as *O. Erichsoni*, Hope. The size Hope gives is Long., $4\frac{1}{4}$ l. Macleay says 6 l. My specimens vary from 4 l. to $5\frac{1}{2}$ l. It should be noted however that the puncturation of the pronotum is not mentioned by Macleay as a point of difference from *fissiceps*, and if it is *not* different,—then *integriceps* is probably a good species.

O. salebrosus, Macl. This species (Long., $3\frac{1}{4}$ l.) from the far North of W. Australia is black and nitid, with a non-carinate head, the clypeus rounded in front, the pronotum rugulose, retuse in front with four tubercles, the elytra tuberculate. It is no doubt a very remarkable species, which I have not seen.

O. Crotchii, Har. This is a large species (Long., $6\frac{1}{2}$ l.), its exact habitat not recorded, its general colour dark brown with some parts greenish, a single elongate horn on the head of the male (the only sex described), its pronotum punctulate and in front retuse and feebly quadrituberculate. I have not seen any *Onthophagus* resembling it, and cannot determine its place in the genus.

O. lucidicollis, Bohem. A fairly large species (Long., $4\frac{1}{4}$ l.), reported from Sydney. I judge from the description that it must be near *O. australis*, from which its "scarcely punctulate" pronotum and dark antennal club seem to distinguish it. Its male frontal characters are those of a very feebly developed male *australis*. It seems also to resemble *O. tweedensis*, Blackb., differing by *inter alia* its dark antennal club and the obtuse front angles of its prothorax.

O. purpureicollis, Macl. This small species from N. Queensland is very briefly described. It is said to be black, nitid, with the pronotum purplish, the head with two small tubercles, the clypeus acuminate and reflexed, the pronotum finely punctulate and retuse in front, the elytra strongly striate (no information

about the interstices, or the clypeal suture). No specimen before me seems to fit the description.

O. emarginatus, Macl. A small species from Cape York (Long., 2½ l.), black (the head and prothorax nitid and bronzy, the elytra subopaque and indistinctly marked with reddish), the clypeus feebly emarginate, the head with a frontal lamina horned at the ends, the pronotum finely punctulate and slightly retuse in front, the elytral interstices flat.

O. parallelicornis, Macl. A fairly large species (Long., 4 l.) from Cape York, black, subnitid clypeus non-emarginate, head with frontal lamina horned at each end, pronotum finely punctulate, non-retuse in front and devoid of tubercles, the elytral interstices wide and rugulose.

O. incornutus, Macl., is from Queensland (Long., 2½ l.), black, subnitid (pronotum of female said to be coppery, elytra spotted with red), front of clypeus almost truncate, general surface very finely punctulate, a feeble obtuse frontal carina in male (wanting in female), elytra with wide flat interstices (no mention of pronotum being retuse or tuberculate).

O. evanidus, Har. Probably near *O. Fletcheri*, Blackburn, but not likely to be identical as it is not all probable that Harold would have failed to mention the presence of elytral setæ; moreover the frontal characters of the male do not agree in the two species, *Fletcheri* has no coppery tone of colour, and the habitat of *evanidus* (Tasmania) is very remote from that of *Fletcheri*.

O. planicollis, Har. A species of moderate size (Long., 4 l.) from Cape York, black except the head and pronotum which are coppery, the head devoid of transverse carinæ, the pronotum coarsely punctulate and neither retuse nor tuberculate, the elytra with alternate interstices elevated and granulate-punctulate. Associated by its author with *O. Kingi* (? Har.), and *Erichsoni* (? Hope). By the latter name no doubt *inermis*, Macl., was intended, but *Erichsoni* is a very different insect (see my note on *O. Erichsoni*, Hope). The alternate convexity of the elytral interstices is an unusual character among the Australian *Onthophagi*. The antennæ are yellow.

O. granum, Lansb. An extremely small species (Long., 1½ l.) from Cape York, black, nitid (except the head and pronotum which are bronzy), the clypeus emarginate in front, the head bicarinate, the pronotum strongly punctulate and neither retuse nor tuberculate, the elytral interstices convex and unpunctured, the club dark. Said to be near *O. parvus*, Blanch., and *O. incornutus*, Macl., but the author does not say that he has seen the type of either of those species neither does it appear probable that he has done so, and therefore the statement probably means no more than that Lansberge has arrived at that

conclusion from his reading the very insufficient descriptions of those two. For my own part I cannot think that *granum* is very near *parvus* otherwise than superficially, if my identification of the latter (my reasons for which will be found under the heading of *parvus*) be correct. It is not of much use to compare an *Onthophagus* with an almost undescribed insect without stating the grounds on which it has been identified, so that the correctness or otherwise of the determination can be estimated.

O. promptus, Har. A brightly metallic species from "Northern Australia," of moderate size (Long., $3-3\frac{3}{4}$ l.), clypeus non-emarginate in front, head bicarinate, antennæ red, pronotum neither retuse nor tuberculate, the elytral interstices subconvex, feebly but closely punctulate. I do not think I have seen it, nor can I place it in any group as the description makes no reference to the base of the pronotum. It seems to me very probably identical with *O. viridiobscurus*, Blanch.

O. discolor, Hope. There can hardly be a doubt I think that this is a synonym of *O. viridiobscurus*, Blanch. The description is shorter than that of *viridiobscurus* but does not indicate any definite distinctive character. The size quoted is the same. The habitat of *viridiobscurus* (Raffles Bay) is very near to that of *discolor* (Port Essington).

O. viridiobscurus, Blanch. This is a species of moderate size (Long., $3\frac{1}{2}$ l.) from the Port Essington region, nitid, dark metallic green, the clypeus non-emarginate in front, head without a frontal elevation (*discolor* is said to have a frontal carina, probably sexual), pronotum very finely punctulate and without carina or tubercle, elytra with striæ strongly punctulate and interstices evidently convex and very finely punctulate, antennæ brown (in the description of *discolor* called yellowish). I do not know any species near enough to *O. viridiobscurus* to need any statement of differentiating characters,—except of course the preceding two, which are probably not distinct from it.

O. rubescens, Macl. A very small species (Long., $1\frac{1}{4}$ l.) from the far North of W. Australia. Apparently very near to *O. cruciger*, Macl. (from the same region) but somewhat differently marked with blackish and having elytral interstices (not "smooth", but) minutely punctulate.

O. minusculus, Macl. From same region and of same size as the preceding. Also very near *cruciger*, Macl., but pronotum without lateral red blotch and the elytra more deeply punctulate-striate with interstices slightly convex and minutely punctulate.

O. Fabricii, Waterh. A very small species from Queensland, closely allied to *O. quadripustulatus*, Fab., its pronotum more sparsely punctulate and the head between the carinæ distinctly punctulate.

O. decurio, Lansb. A comparison of the descriptions of this and of *rubrimaculatus*, Macl., leaves little doubt that Lansberge's name is a mere synonym of the latter.

O. patruelis, Har. The description of this species clearly indicates that the name is a synonym of *O. asper*, Macl.

O. propinquus, Macl. This species does not seem to be distinguished from *O. bicornis*, Macl., by any characters that indicate more than feebleness of development. I regard the name as a synonym.

O. humeralis, Macl. Must be very near to *O. bipustulatus*, Fab., judged by the description. The type is said to be a male, and of *bipustulatus* I know only the female so I am unable to decide whether the two are distinct.

O. Duboulayi, Waterh. I can find no definite character in the description of this species to separate it from *O. jubatus*, Har., of which the name seems to me a synonym.

O. hostilis, Har. I have already (Pr. L.S., N.S.W., 1892, p. 283) pointed out that this is a synonym of *O. Adelaidæ*, Hope.

BUPRESTIDÆ.

STIGMODERA.

S. tyrrena, sp. nov. Minus lata sat convexa; sat nitida; splendide viridis, elytris rufobrunneis, notulis viridibus (sc. margine basali; macula subhumerali ovali; fascia postmediana omnino transversa—in sutura et utrinque dilatata, exemplorum nonnullorum utrinque interrupta; macula communi apicali elongata nonnihil subquadrata; sutura a basi fere ad medium, postice dilatata; nonnullorum exemplorum sutura inter fasciam postmedianam et maculam apicalem) exceptis, lateribus late rufis; corpore subtus sparsim breviter albido-pubescenti; capite elongato inter oculos (his leviter obliquis) concavo, crebre sat fortiter punctulato; prothorace quam longiori et postice quam antice ut 8 ad 5 latiori, supra sat fortiter (apicem versus magis subtiliter et magis crebre, latera versus magis crebre) punctulato, lateribus a margine antico longe pone medium divergentibus hinc ad basin fere parallelis, intra angulos posticos vix manifeste foveolato; elytris ad basin leviter antrorsum convexis, pone medium modice dilatatis ad apicem sat fortiter bi-apiculatis, sat fortiter punctulato-striatis, striis 7^a 8^a que antice ad humeros abbreviatis, interstitiis subfortiter punctulatis antice minus convexis apicem versus subcostiformibus, lateribus haud crenulatis; unguiculis inermibus. Long., $5\frac{1}{2}$ l.; lat., $2\frac{1}{5}$ l.

Much like *S. delectabilis*, Saund., in respect of sculpture and coloring (except in the dark parts being of a brilliant green), but

of narrower and less flattened build and with the head considerably more elongate, the base of the elytra margined with green, and the basal two ventral segments much less closely punctulate at the sides.

Queensland (Mr. Lea).

S. subpura, sp. nov. Sat lata, minus convexa; sat nitida; violacea, capite prothorace scutelloque æneis, elytris brunneotestaceis (basin suturaque anguste,—hac antice paullo magis late,—infuscatis), macula parva nigra transversim ovali communi antepicali notatis, antennis basin versus cyaneis apicem versus aureis; capite modice producto, sat fortiter sat crebre punctulato, inter oculos (his leviter obliquis) late profunde concavo; prothorace quam longiori (et postice quam antice) ut 12 ad $8\frac{1}{2}$ latiori, subgibbo, haud manifeste canaliculato, supra sat fortiter sat sparsim (antice magis crebre, latera versus crebre sat rugulose) punctulato, lateribus minus arcuatis, latitudine majori paullo pone medium sita; elytris ad basin antrorsum bisinuatim sat fortiter convexis pone medium sat fortiter dilatatis, ad apicem breviter biapiculatis processibus inter se sat approximatis sat æqualibus), striatis, striis subfortiter punctulatis, interstitiis 1° — 3° subtiliter sparsim (ceteris confertim minus subtiliter) punctulatis, interstitiis 1° 3° 5° 7° 8° que (7° 8° que antice conjunctis) antice latis tumidis (ut *S. amplipennis*, Saund.), aliunde interstitiis antice minus postice magis convexis, angulis humeralibus rectis. Long., 5 l.; lat., 2 l.

Should be placed near *S. amplipennis*, Saund., from which it differs *inter alia multa* by the remarkable difference between the puncturation of the nearest three interstices to the suture and that of the other elytral interstices.

N.S. Wales (in my collection; also taken by Mr. Lea).

CLERIDÆ.

MACROTELUS.

Trans. Roy. Soc., S.A., 1901, p. 25. I described a species under the name *Elasmocerus picticollis*. Herr. Schenkling (Deutsche Ent. Zeitsch., 1903, p. 12) has displaced the name *Elasmocerus* in favour of *Macrotelus*. There seems to be no doubt of the two names being synonyms but Lacordaire rejected the latter as a *nom. præocc.* on account of *Macrotelia* having been previously used. I presume that Schenkling regards *Macrotelia* as a name that does not invalidate *Macrotelus*, in which I agree with him. I regret that I accepted Lacordaire's conclusion without weighing his premises and therefore call attention to the fact that the insect referred to above should be known as *Macrotelus picticollis*, Blackb.

NATALIS.

N. Leai, Blackb. In describing this species (Tr. R.S., S.A., 1899, p. 31) I referred to its agreement in non-generic characters with the description of *Opilo floccosus*, Schenk. (published in 1898) but pointed out that as Schenkling especially mentioned his insect having the securiform maxillary palpi and bifid tarsal lamellæ of an *Opilo* the two species must be distinct. I find, now, that Schenkling has published a note (Deutsche Ent. Zeitsch., 1903, p. 19) to the effect that he has examined more specimens of *O. floccosus* and observes the characters referred to above to be in reality as in *Natalis* to which genus his species must therefore be transferred. This of course makes it identical with my *N. Leai*; and the synonymy will be as follows

Natalis (Opilo) floccosus, Schenk.

Leai (Natalis), Blackb.

TENEBRIONIDÆ.

EXANGELTUS.

E. gracilior, sp. nov. Opacus; nigro-piceus, antennis palpis pedibus et corpore subtus plus minusve rufescentibus; anguste elongatus; sat convexus; setis brevibus subtilibus minus crebre vestitus; prothorace minus fortiter transverso, antice parum emarginato (quam postice sat angustiori), longitudinaliter confertim subtilius strigato, lateribus antice leviter arcuatis postice fere rectis, angulis anticis bene determinatis leviter obtusis posticis subacutis retrorsum directis; elytris sat parallelis, quam prothorax sat latioribus, striis circiter 17 crebre punctulatis impressis, harum puncturis quadratis, interstitiis angustis (alternis vix prominentibus); corpore subtus crebre sat fortiter punctulato; antennis sat elongatis; oculis magnis. Long., 4 l.; lat., 1½ l.

Considerably smaller than *E. angustus*, Blackb. It has longer and more slender antennæ, the 3rd joint of which is as long as the 4th and 5th together, while the 10th and 11th together are scarcely longer than the 9th; the head is less depressed than in *E. angustus* but (as in that species) the clypeus is not separated from the front by any transverse furrow or noticeable suture; the prothorax is considerably less transverse than that of *E. angustus* and the longitudinal wrinkling of its surface is very much finer; on the elytra the intervals between puncture and puncture in the striæ are of the same height as the interstices between the striæ (except the alternate interstices which are very slightly prominent); the setæ of the dorsal surface are much finer and less conspicuous. The tarsi are (like those of *E. angustus*) clothed beneath with soft close pubescence.

S. Australia; near Woodville.

CHRYSOMELIDÆ.

PHYLLOCHARIS.

P. melanocephala, Baly. In the Proceedings of the Australasian Association for the Advancement of Science, 1902, p. 402, Mr. Lea announces the occurrence in N.S. Wales of a species under the above designation. I cannot find that Baly described such an insect. Perhaps Mr. Lea refers to *P. melanospila*, Baly, described in the Journal of Entomology, Vol. I., p. 290.

AUGOMELA.

A. ignita. In the Proceedings of the Australasian Association for the Advancement of Science, 1902, p. 417, Mr. Lea has described an insect under this name, having apparently overlooked the fact that Mr. M. Jacoby had already described an Australian *Augomela* under the same name. It appears to me that the two descriptions are founded on the same species, although Mr. Lea's brevity (omitting *e.g.* a description of the shape of the prothorax) makes it difficult to be confident. Jacoby's type (Ann. Ent. Soc. Belg., 1898, p. 368) was from Richmond, N.S.W.,—Lea's from Illawarra, N.S.W.

POSTSCRIPT.

While the preceding pages have been in the printers' hands it has occurred to me that above, in my tentative Revision of the genus *Onthophagus*, I have used the term "metasternum" somewhat loosely. "Disc of the metasternum" would have been more accurate, as in every case where the segment is mentioned it is the horizontal surface (bounded laterally by the lines of the intermediate coxæ produced hindward to the abdomen) that is referred to, and the "sides of the metasternum" mean the lateral parts of that horizontal surface.